TrigonometryExercise4 Answers for No.9124

$$Ans1 = \begin{bmatrix} .1 = \left(\mathrm{Sin}\left(\frac{7\pi}{12}\right) = \frac{\sqrt{2}}{4} + \frac{\sqrt{2}\sqrt{3}}{4}\right) & .2 = \left(\mathrm{Cos}(15^{o}) = \frac{\sqrt{2}}{4} + \frac{\sqrt{2}\sqrt{3}}{4}\right) \\ .3 = \left(\mathrm{Tan}\left(\frac{5\pi}{12}\right) = 2 + \sqrt{3}\right) & .4 = \left(\mathrm{Cos}\left(\frac{11\pi}{12}\right) = -\frac{\sqrt{2}}{4} - \frac{\sqrt{2}\sqrt{3}}{4}\right) \\ .5 = (\mathrm{Sec}((\text{-}255)^{o}) = -\sqrt{2}\sqrt{3} - \sqrt{2}) & .6 = \left(\mathrm{Cot}\left(-\frac{\pi}{12}\right) = -2 - \sqrt{3}\right) \\ .7 = \left(\mathrm{Sin}((\text{-}345)^{o}) = \frac{\sqrt{2}\sqrt{3}}{4} - \frac{\sqrt{2}}{4}\right) & .8 = \left(\mathrm{Csc}\left(-\frac{5\pi}{12}\right) = -\sqrt{2}\sqrt{3} + \sqrt{2}\right) \end{bmatrix}, \quad , \begin{bmatrix} :) \\ :(\\ M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \\ :) \\ :(\end{bmatrix}$$

$$Ans2 = \begin{bmatrix} .1 = \left(\frac{2\,\mathrm{Tan}(22.5^{o})}{1 - \mathrm{Tan}(22.5^{o})^2} = (\mathrm{Tan}(45^{o}) = 1)\right) & .2 = \left(\mathrm{Cos}(57^{o})\,\mathrm{Cos}(12^{o}) + \mathrm{Sin}(57^{o})\,\mathrm{Sin}(12^{o}) = \left(\mathrm{Cos}(45^{o}) = \frac{\sqrt{2}}{2}\right)\right) \\ .3 = \left(1 - 2\,\mathrm{Sin}\left(\frac{\pi}{12}\right)^2 = \left(\mathrm{Cos}\left(\frac{\pi}{6}\right) = \frac{\sqrt{3}}{2}\right)\right) & .4 = \left(\frac{\mathrm{Tan}\left(\frac{5\pi}{36}\right) + \mathrm{Tan}\left(\frac{7\pi}{36}\right)}{1 - \mathrm{Tan}\left(\frac{5\pi}{36}\right)\mathrm{Tan}\left(\frac{7\pi}{36}\right)} = \left(\mathrm{Tan}\left(\frac{\pi}{3}\right) = \sqrt{3}\right)\right) \\ .5 = \left(\frac{\mathrm{Tan}\left(\frac{7\pi}{18}\right) - \mathrm{Tan}\left(\frac{\pi}{18}\right)}{1 + \mathrm{Tan}\left(\frac{7\pi}{18}\right)\mathrm{Tan}\left(\frac{\pi}{18}\right)} = \left(\mathrm{Tan}\left(\frac{\pi}{3}\right) = \sqrt{3}\right)\right) & .6 = \left(\mathrm{Cos}(10^{o})\,\mathrm{Cos}(20^{o}) - \mathrm{Sin}(10^{o})\,\mathrm{Sin}(20^{o}) = \left(\mathrm{Cos}(30^{o}) = \frac{\sqrt{3}}{2}\right)\right) \\ .7 = \left(2\,\mathrm{Cos}\left(\frac{\pi}{8}\right)^2 - 1 = \left(\mathrm{Cos}\left(\frac{\pi}{4}\right) = \frac{\sqrt{2}}{2}\right)\right) & .8 = \left(\mathrm{Sin}(42^{o})\,\mathrm{Cos}(12^{o}) - \mathrm{Cos}(42^{o})\,\mathrm{Sin}(12^{o}) = \left(\mathrm{Sin}(30^{o}) = \frac{1}{2}\right)\right) \\ .9 = \left(2\,\mathrm{Sin}(15^{o})\,\mathrm{Cos}(15^{o}) = \left(\mathrm{Sin}(30^{o}) = \frac{1}{2}\right)\right) & .10 = \left(\mathrm{Cos}(22.5^{o})^2 - \mathrm{Sin}(22.5^{o})^2 = \left(\mathrm{Cos}(45^{o}) = \frac{\sqrt{2}}{2}\right)\right) \end{bmatrix}, \quad , \begin{bmatrix} :) \\ :(\\ :) \\ :(\\ \left[\left[\begin{matrix} M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \end{matrix}\right]\right] \\ :) \\ :(\\ :) \\ :(\\ :) \\ :(\end{bmatrix}$$

$$Ans3 = \begin{bmatrix} .1 = \left(\mathrm{Sin}(\alpha) = \frac{\sqrt{39}}{8}\right) & .2 = \left(\mathrm{Cos}(\beta) = -\frac{2\sqrt{10}}{7}\right) \\ .3 = \left(\mathrm{Tan}(\alpha) = \frac{\sqrt{39}}{5}\right) & .4 = \left(\mathrm{Sin}(\beta - \alpha) = \frac{15}{56} + \frac{\sqrt{39}\sqrt{10}}{28}\right) \\ .5 = \left(\mathrm{Cos}(\alpha - \beta) = -\frac{5\sqrt{10}}{28} + \frac{3\sqrt{39}}{56}\right) & .6 = \left(\mathrm{Tan}(\alpha + \beta) = \frac{245\sqrt{39}}{649} - \frac{384\sqrt{10}}{649}\right) \\ .7 = \left(\mathrm{Sin}(2\alpha) = \frac{5\sqrt{39}}{32}\right) & .8 = \left(\mathrm{Tan}(2\beta) = -\frac{12\sqrt{10}}{31}\right) \end{bmatrix}, \quad , \quad Ans4 = \begin{bmatrix} .1 = \left(\mathrm{Cos}(\alpha) = -\frac{\sqrt{3}}{2}\right) & .2 = \left(\mathrm{Sin}(\beta) = -\frac{\sqrt{65}}{9}\right) \\ .3 = \left(\mathrm{Tan}(\alpha) = \frac{\sqrt{3}}{3}\right) & .4 = \left(\mathrm{Sin}(\alpha - \beta) = -\frac{2}{9} - \frac{\sqrt{3}\sqrt{65}}{18}\right) \\ .5 = \left(\mathrm{Cos}(\alpha + \beta) = -\frac{2\sqrt{3}}{9} - \frac{\sqrt{65}}{18}\right) & .6 = \left(\mathrm{Tan}(\beta - \alpha) = \frac{16\sqrt{65}}{17} + \frac{81\sqrt{3}}{17}\right) \\ .7 = \left(\mathrm{Cos}(2\alpha) = \frac{1}{2}\right) & .8 = \left(\mathrm{Tan}(2\beta) = \frac{8\sqrt{65}}{49}\right) \end{bmatrix}, \quad , \begin{bmatrix} :) \\ :(\\ M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \\ :) \\ :(\end{bmatrix}$$

$$Ans5 = (\mathrm{Cos}(40^{o}) = (\mathrm{Sqrt}(0.5870) = 0.766)), \quad , \begin{bmatrix} M \\ U \\ T \end{bmatrix}$$

$$Ans6 = (\mathrm{Sin}(26^{o}) = (\mathrm{Sqrt}(0.1920) = 0.438)), \quad , \begin{bmatrix} M \\ U \\ T \end{bmatrix}$$

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$$Ans1 = \begin{bmatrix} .1 = \left(\mathrm{Sin}(15^o) = \frac{\sqrt{2}\sqrt{3}}{4} - \frac{\sqrt{2}}{4}\right) & .2 = \left(\mathrm{Cos}\left(\frac{7\pi}{12}\right) = \frac{\sqrt{2}}{4} - \frac{\sqrt{2}\sqrt{3}}{4}\right) \\ .3 = (\mathrm{Tan}(75^o) = 2 + \sqrt{3}) & .4 = \left(\mathrm{Sin}\left(-\frac{17\pi}{12}\right) = \frac{\sqrt{2}}{4} + \frac{\sqrt{2}\sqrt{3}}{4}\right) \\ .5 = (\mathrm{Csc}((-75)^o) = -\sqrt{2}\sqrt{3} + \sqrt{2}) & .6 = \left(\mathrm{Tan}\left(-\frac{19\pi}{12}\right) = 2 + \sqrt{3}\right) \\ .7 = \left(\mathrm{Cos}((-345)^o) = \frac{\sqrt{2}}{4} + \frac{\sqrt{2}\sqrt{3}}{4}\right) & .8 = (\mathrm{Cot}(345^o) = -2 - \sqrt{3}) \end{bmatrix}, \quad , \begin{bmatrix} \text{:)} \\ \text{:(} \\ M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \\ \text{:)} \\ \text{:(} \end{bmatrix}$$

$$Ans2 = \begin{bmatrix} .1 = \left(\frac{2\,\mathrm{Tan}(15^o)}{1 - \mathrm{Tan}(15^o)^2} = \left(\mathrm{Tan}(30^o) = \frac{\sqrt{3}}{3}\right)\right) & .2 = \left(\mathrm{Cos}(22.5^o)^2 - \mathrm{Sin}(22.5^o)^2 = \left(\mathrm{Cos}(45^o) = \frac{\sqrt{2}}{2}\right)\right) \\ .3 = \left(\frac{\mathrm{Tan}(18^o) + \mathrm{Tan}(12^o)}{1 - \mathrm{Tan}(18^o)\,\mathrm{Tan}(12^o)} = \left(\mathrm{Tan}(30^o) = \frac{\sqrt{3}}{3}\right)\right) & .4 = \left(2\,\mathrm{Sin}\left(\frac{\pi}{8}\right)\mathrm{Cos}\left(\frac{\pi}{8}\right) = \left(\mathrm{Sin}\left(\frac{\pi}{4}\right) = \frac{\sqrt{2}}{2}\right)\right) \\ .5 = \left(\mathrm{Cos}(55^o)\,\mathrm{Cos}(10^o) + \mathrm{Sin}(55^o)\,\mathrm{Sin}(10^o) = \left(\mathrm{Cos}(45^o) = \frac{\sqrt{2}}{2}\right)\right) & .6 = \left(2\,\mathrm{Cos}\left(\frac{\pi}{12}\right)^2 - 1 = \left(\mathrm{Cos}\left(\frac{\pi}{6}\right) = \frac{\sqrt{3}}{2}\right)\right) \\ .7 = \left(1 - 2\,\mathrm{Sin}(15^o)^2 = \left(\mathrm{Cos}(30^o) = \frac{\sqrt{3}}{2}\right)\right) & .8 = \left(\mathrm{Sin}(48^o)\,\mathrm{Cos}(12^o) + \mathrm{Cos}(48^o)\,\mathrm{Sin}(12^o) = \left(\mathrm{Sin}(60^o) = \frac{\sqrt{3}}{2}\right)\right) \\ .9 = \left(\mathrm{Cos}\left(\frac{11\pi}{60}\right)\mathrm{Cos}\left(\frac{\pi}{15}\right) - \mathrm{Sin}\left(\frac{11\pi}{60}\right)\mathrm{Sin}\left(\frac{\pi}{15}\right) = \left(\mathrm{Cos}\left(\frac{\pi}{4}\right) = \frac{\sqrt{2}}{2}\right)\right) & .10 = \left(\mathrm{Sin}\left(\frac{7\pi}{36}\right)\mathrm{Cos}\left(\frac{\pi}{36}\right) - \mathrm{Cos}\left(\frac{7\pi}{36}\right)\mathrm{Sin}\left(\frac{\pi}{36}\right) = \left(\mathrm{Sin}\left(\frac{\pi}{6}\right) = \frac{1}{2}\right)\right) \end{bmatrix}, \quad , \begin{bmatrix} \text{:)} \\ \text{:(} \\ \text{:)} \\ \text{:(} \\ \left[\left[\begin{matrix} M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \end{matrix}\right]\right] \\ \text{:)} \\ \text{:(} \\ \text{:)} \\ \text{:(} \\ \text{:)} \\ \text{:(} \end{bmatrix}$$

$$Ans3 = \begin{bmatrix} .1 = \left(\mathrm{Sin}(\alpha) = \frac{\sqrt{5}}{3}\right) & .2 = \left(\mathrm{Cos}(\beta) = -\frac{\sqrt{3}}{2}\right) \\ .3 = \left(\mathrm{Tan}(\alpha) = \frac{\sqrt{5}}{2}\right) & .4 = \left(\mathrm{Sin}(\alpha + \beta) = -\frac{\sqrt{5}\sqrt{3}}{6} + \frac{1}{3}\right) \\ .5 = \left(\mathrm{Cos}(\beta - \alpha) = -\frac{\sqrt{3}}{3} + \frac{\sqrt{5}}{6}\right) & .6 = \left(\mathrm{Tan}(\alpha - \beta) = \frac{8\sqrt{5}}{7} + \frac{9\sqrt{3}}{7}\right) \\ .7 = \left(\mathrm{Cos}(2\beta) = \frac{1}{2}\right) & .8 = (\mathrm{Tan}(2\alpha) = -4\sqrt{5}) \end{bmatrix}, \quad , \quad Ans4 = \begin{bmatrix} .1 = \left(\mathrm{Cos}(\alpha) = -\frac{\sqrt{3}}{2}\right) & .2 = \left(\mathrm{Sin}(\beta) = -\frac{\sqrt{33}}{7}\right) \\ .3 = \left(\mathrm{Tan}(\beta) = -\frac{\sqrt{33}}{4}\right) & .4 = \left(\mathrm{Sin}(\alpha - \beta) = -\frac{2}{7} - \frac{\sqrt{3}\sqrt{33}}{14}\right) \\ .5 = \left(\mathrm{Cos}(\alpha + \beta) = -\frac{2\sqrt{3}}{7} - \frac{\sqrt{33}}{14}\right) & .6 = \left(\mathrm{Tan}(\beta - \alpha) = -\frac{16\sqrt{3}\sqrt{11}}{15} - \frac{49\sqrt{3}}{15}\right) \\ .7 = \left(\mathrm{Cos}(2\beta) = \frac{-17}{49}\right) & .8 = (\mathrm{Tan}(2\alpha) = \sqrt{3}) \end{bmatrix}, \quad , \begin{bmatrix} \text{:)} \\ \text{:(} \\ M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \\ \text{:)} \\ \text{:(} \end{bmatrix}$$

$$Ans5 = (\mathrm{Sin}(34^o) = (\mathrm{Sqrt}(0.3125) = 0.559)), \quad , \begin{bmatrix} M \\ U \\ T \end{bmatrix}$$

$$Ans6 = (\mathrm{Cos}(18^o) = (\mathrm{Sqrt}(0.9045) = 0.951)), \quad , \begin{bmatrix} M \\ U \\ T \end{bmatrix}$$

$$Ans1 = \begin{bmatrix} .1 = \left(\operatorname{Cos}\left(\frac{\pi}{12}\right) = \frac{\sqrt{2}}{4} + \frac{\sqrt{2}\sqrt{3}}{4}\right) & .2 = \left(\operatorname{Sin}(75^o) = \frac{\sqrt{2}}{4} + \frac{\sqrt{2}\sqrt{3}}{4}\right) \\ .3 = (\operatorname{Tan}(105^o) = -2 - \sqrt{3}) & .4 = (\operatorname{Cot}((-75)^o) = -2 + \sqrt{3}) \\ .5 = \left(\operatorname{Csc}\left(\frac{17\pi}{12}\right) = -\sqrt{2}\sqrt{3} + \sqrt{2}\right) & .6 = \left(\operatorname{Cos}\left(\frac{13\pi}{12}\right) = -\frac{\sqrt{2}}{4} - \frac{\sqrt{2}\sqrt{3}}{4}\right) \\ .7 = (\operatorname{Tan}(285^o) = -2 - \sqrt{3}) & .8 = \left(\operatorname{Sin}(345^o) = \frac{\sqrt{2}}{4} - \frac{\sqrt{2}\sqrt{3}}{4}\right) \end{bmatrix}, \begin{bmatrix} :) \\ :(\\ M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \\ :) \\ :(\end{bmatrix}$$

$$Ans2 = \begin{bmatrix} .1 = \left(1 - 2\operatorname{Sin}\left(\frac{\pi}{12}\right)^2 = \left(\operatorname{Cos}\left(\frac{\pi}{6}\right) = \frac{\sqrt{3}}{2}\right)\right) & .2 = \left(\operatorname{Cos}(60^o)\operatorname{Cos}(15^o) + \operatorname{Sin}(60^o)\operatorname{Sin}(15^o) = \left(\operatorname{Cos}(45^o) = \frac{\sqrt{2}}{2}\right)\right) \\ .3 = (\operatorname{Cos}(10^o)\operatorname{Cos}(80^o) - \operatorname{Sin}(10^o)\operatorname{Sin}(80^o) = (\operatorname{Cos}(90^o) = 0)) & .4 = \left(2\operatorname{Cos}(15^o)^2 - 1 = \left(\operatorname{Cos}(30^o) = \frac{\sqrt{3}}{2}\right)\right) \\ .5 = \left(\frac{2\operatorname{Tan}(22.5^o)}{1 - \operatorname{Tan}(22.5^o)^2} = (\operatorname{Tan}(45^o) = 1)\right) & .6 = \left(\operatorname{Cos}(22.5^o)^2 - \operatorname{Sin}(22.5^o)^2 = \left(\operatorname{Cos}(45^o) = \frac{\sqrt{2}}{2}\right)\right) \\ .7 = \left(2\operatorname{Sin}\left(\frac{\pi}{8}\right)\operatorname{Cos}\left(\frac{\pi}{8}\right) = \left(\operatorname{Sin}\left(\frac{\pi}{4}\right) = \frac{\sqrt{2}}{2}\right)\right) & .8 = \left(\operatorname{Sin}\left(\frac{\pi}{18}\right)\operatorname{Cos}\left(\frac{\pi}{9}\right) + \operatorname{Cos}\left(\frac{\pi}{18}\right)\operatorname{Sin}\left(\frac{\pi}{9}\right) = \left(\operatorname{Sin}\left(\frac{\pi}{6}\right) = \frac{1}{2}\right)\right) \\ .9 = \left(\frac{\operatorname{Tan}(15^o) + \operatorname{Tan}(30^o)}{1 - \operatorname{Tan}(15^o)\operatorname{Tan}(30^o)} = (\operatorname{Tan}(45^o) = 1)\right) & .10 = \left(\operatorname{Sin}\left(\frac{4\pi}{9}\right)\operatorname{Cos}\left(\frac{\pi}{9}\right) - \operatorname{Cos}\left(\frac{4\pi}{9}\right)\operatorname{Sin}\left(\frac{\pi}{9}\right) = \left(\operatorname{Sin}\left(\frac{\pi}{3}\right) = \frac{\sqrt{3}}{2}\right)\right) \end{bmatrix}, \begin{bmatrix} :) \\ :(\\ :) \\ :(\\ \begin{bmatrix}\begin{bmatrix} M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \end{bmatrix}\end{bmatrix} \\ :) \\ :(\\ :) \\ :(\\ :) \\ :(\end{bmatrix}$$

$$Ans3 = \begin{bmatrix} .1 = \left(\operatorname{Cos}(\alpha) = \frac{2\sqrt{14}}{9}\right) & .2 = \left(\operatorname{Sin}(\beta) = -\frac{\sqrt{5}}{3}\right) \\ .3 = \left(\operatorname{Tan}(\alpha) = \frac{5\sqrt{14}}{28}\right) & .4 = \left(\operatorname{Sin}(\beta - \alpha) = -\frac{2\sqrt{14}\sqrt{5}}{27} + \frac{10}{27}\right) \\ .5 = \left(\operatorname{Cos}(\alpha + \beta) = -\frac{4\sqrt{14}}{27} + \frac{5\sqrt{5}}{27}\right) & .6 = \left(\operatorname{Tan}(\alpha - \beta) = \frac{10\sqrt{14}}{11} - \frac{18\sqrt{5}}{11}\right) \\ .7 = \left(\operatorname{Cos}(2\alpha) = \frac{31}{81}\right) & .8 = (\operatorname{Tan}(2\beta) = -4\sqrt{5}) \end{bmatrix}, \quad Ans4 = \begin{bmatrix} .1 = \left(\operatorname{Cos}(\alpha) = -\frac{\sqrt{3}}{2}\right) & .2 = \left(\operatorname{Sin}(\beta) = -\frac{2\sqrt{2}}{3}\right) \\ .3 = (\operatorname{Tan}(\beta) = -2\sqrt{2}) & .4 = \left(\operatorname{Sin}(\beta - \alpha) = \frac{\sqrt{2}\sqrt{3}}{3} - \frac{1}{6}\right) \\ .5 = \left(\operatorname{Cos}(\alpha - \beta) = -\frac{\sqrt{3}}{6} - \frac{\sqrt{2}}{3}\right) & .6 = \left(\operatorname{Tan}(\alpha + \beta) = \frac{9\sqrt{3}}{5} + \frac{8\sqrt{2}}{5}\right) \\ .7 = \left(\operatorname{Cos}(2\alpha) = \frac{1}{2}\right) & .8 = \left(\operatorname{Tan}(2\beta) = \frac{4\sqrt{2}}{7}\right) \end{bmatrix}, \begin{bmatrix} :) \\ :(\\ M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \\ :) \\ :(\end{bmatrix}$$

$$Ans5 = (\operatorname{Sin}(29^o) = (\operatorname{Sqrt}(0.2350) = 0.485)), \begin{bmatrix} M \\ U \\ T \end{bmatrix}$$

$$Ans6 = (\operatorname{Cos}(7^o) = (\operatorname{Sqrt}(0.9850) = 0.993)), \begin{bmatrix} M \\ U \\ T \end{bmatrix}$$

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TrigonometryExercise4 Answers for No.9312

$$Ans1 = \begin{bmatrix} .1 = \left(\operatorname{Cos}(105^{o}) = \frac{\sqrt{2}}{4} - \frac{\sqrt{2}\sqrt{3}}{4}\right) & .2 = \left(\operatorname{Sin}\left(\frac{5\pi}{12}\right) = \frac{\sqrt{2}}{4} + \frac{\sqrt{2}\sqrt{3}}{4}\right) \\ .3 = (\operatorname{Tan}(15^{o}) = 2 - \sqrt{3}) & .4 = (\operatorname{Csc}((-75)^{o}) = -\sqrt{2}\sqrt{3} + \sqrt{2}) \\ .5 = \left(\operatorname{Sin}\left(-\frac{17\pi}{12}\right) = \frac{\sqrt{2}}{4} + \frac{\sqrt{2}\sqrt{3}}{4}\right) & .6 = (\operatorname{Tan}((-165)^{o}) = 2 - \sqrt{3}) \\ .7 = \left(\operatorname{Cos}\left(\frac{13\pi}{12}\right) = -\frac{\sqrt{2}}{4} - \frac{\sqrt{2}\sqrt{3}}{4}\right) & .8 = \left(\operatorname{Cot}\left(-\frac{\pi}{12}\right) = -2 - \sqrt{3}\right) \end{bmatrix}, \begin{bmatrix} :) \\ :(\\ M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \\ :) \\ :(\end{bmatrix}$$

$$Ans2 = \begin{bmatrix} .1 = \left(\operatorname{Cos}(50^{o})\operatorname{Cos}(20^{o}) + \operatorname{Sin}(50^{o})\operatorname{Sin}(20^{o}) = \left(\operatorname{Cos}(30^{o}) = \frac{\sqrt{3}}{2}\right)\right) & .2 = \left(\frac{2\operatorname{Tan}\left(\frac{\pi}{12}\right)}{1 - \operatorname{Tan}\left(\frac{\pi}{12}\right)^{2}} = \left(\operatorname{Tan}\left(\frac{\pi}{6}\right) = \operatorname{Tan}\left(\frac{\pi}{6}\right)\right)\right) \\ .3 = \left(\frac{\operatorname{Tan}(35^{o}) + \operatorname{Tan}(25^{o})}{1 - \operatorname{Tan}(35^{o})\operatorname{Tan}(25^{o})} = (\operatorname{Tan}(60^{o}) = \sqrt{3})\right) & .4 = \left(2\operatorname{Sin}(15^{o})\operatorname{Cos}(15^{o}) = \left(\operatorname{Sin}(30^{o}) = \frac{1}{2}\right)\right) \\ .5 = \left(\frac{\operatorname{Tan}\left(\frac{2\pi}{5}\right) - \operatorname{Tan}\left(\frac{\pi}{15}\right)}{1 + \operatorname{Tan}\left(\frac{2\pi}{5}\right)\operatorname{Tan}\left(\frac{\pi}{15}\right)} = \left(\operatorname{Tan}\left(\frac{\pi}{3}\right) = \sqrt{3}\right)\right) & .6 = \left(\operatorname{Sin}\left(\frac{17\pi}{30}\right)\operatorname{Cos}\left(\frac{\pi}{15}\right) - \operatorname{Cos}\left(\frac{17\pi}{30}\right)\operatorname{Sin}\left(\frac{\pi}{15}\right) = \left(\operatorname{Sin}\left(\frac{\pi}{2}\right) = 1\right)\right) \\ .7 = \left(\operatorname{Sin}(30^{o})\operatorname{Cos}(15^{o}) + \operatorname{Cos}(30^{o})\operatorname{Sin}(15^{o}) = \left(\operatorname{Sin}(45^{o}) = \frac{\sqrt{2}}{2}\right)\right) & .8 = \left(1 - 2\operatorname{Sin}\left(\frac{\pi}{8}\right)^{2} = \left(\operatorname{Cos}\left(\frac{\pi}{4}\right) = \frac{\sqrt{2}}{2}\right)\right) \\ .9 = \left(\operatorname{Cos}(22.5^{o})^{2} - \operatorname{Sin}(22.5^{o})^{2} = \left(\operatorname{Cos}(45^{o}) = \frac{\sqrt{2}}{2}\right)\right) & .10 = \left(2\operatorname{Cos}\left(\frac{\pi}{12}\right)^{2} - 1 = \left(\operatorname{Cos}\left(\frac{\pi}{6}\right) = \frac{\sqrt{3}}{2}\right)\right) \end{bmatrix}, \begin{bmatrix} :) \\ :(\\ :) \\ :(\\ \left[\left[\begin{matrix} M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \end{matrix}\right]\right] \\ :) \\ :(\\ :) \\ :(\\ :) \\ :(\end{bmatrix}$$

$$Ans3 = \begin{bmatrix} .1 = \left(\operatorname{Sin}(\alpha) = \frac{4}{5}\right) & .2 = \left(\operatorname{Cos}(\beta) = \frac{\sqrt{15}}{4}\right) \\ .3 = \left(\operatorname{Tan}(\alpha) = \frac{4}{3}\right) & .4 = \left(\operatorname{Sin}(\alpha + \beta) = \frac{\sqrt{15}}{5} - \frac{3}{20}\right) \\ .5 = \left(\operatorname{Cos}(\alpha - \beta) = \frac{3\sqrt{15}}{20} - \frac{1}{5}\right) & .6 = \left(\operatorname{Tan}(\beta - \alpha) = -\frac{25\sqrt{15}}{119} - \frac{192}{119}\right) \\ .7 = \left(\operatorname{Cos}(2\alpha) = \frac{-7}{25}\right) & .8 = \left(\operatorname{Tan}(2\beta) = -\frac{\sqrt{15}}{7}\right) \end{bmatrix}, \; Ans4 = \begin{bmatrix} .1 = \left(\operatorname{Sin}(\alpha) = \frac{\sqrt{3}}{2}\right) & .2 = \left(\operatorname{Cos}(\beta) = -\frac{\sqrt{35}}{6}\right) \\ .3 = \left(\operatorname{Tan}(\beta) = \frac{\sqrt{35}}{35}\right) & .4 = \left(\operatorname{Sin}(\alpha - \beta) = -\frac{\sqrt{3}\sqrt{35}}{12} - \frac{1}{12}\right) \\ .5 = \left(\operatorname{Cos}(\alpha + \beta) = \frac{\sqrt{35}}{12} + \frac{\sqrt{3}}{12}\right) & .6 = \left(\operatorname{Tan}(\beta - \alpha) = \frac{\sqrt{35}}{8} + \frac{9\sqrt{3}}{8}\right) \\ .7 = \left(\operatorname{Sin}(2\beta) = \frac{\sqrt{35}}{18}\right) & .8 = (\operatorname{Tan}(2\alpha) = \sqrt{3}) \end{bmatrix}, \begin{bmatrix} :) \\ :(\\ M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \\ :) \\ :(\end{bmatrix}$$

$$Ans5 = (\operatorname{Sin}(26^{o}) = (\operatorname{Sqrt}(0.1920) = 0.438)), \; \begin{bmatrix} M \\ U \\ T \end{bmatrix}$$

$$Ans6 = (\operatorname{Cos}(4^{o}) = (\operatorname{Sqrt}(0.9950) = 0.998)), \; \begin{bmatrix} M \\ U \\ T \end{bmatrix}$$

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$$Ans1 = \begin{bmatrix} .1 = \left(\mathrm{Sin}\left(\frac{5\pi}{12}\right) = \frac{\sqrt{2}}{4} + \frac{\sqrt{2}\sqrt{3}}{4}\right) & .2 = \left(\mathrm{Cos}(15^{o}) = \frac{\sqrt{2}}{4} + \frac{\sqrt{2}\sqrt{3}}{4}\right) \\ .3 = \left(\mathrm{Tan}\left(\frac{7\pi}{12}\right) = -2 - \sqrt{3}\right) & .4 = \left(\mathrm{Sin}(195^{o}) = \frac{\sqrt{2}}{4} - \frac{\sqrt{2}\sqrt{3}}{4}\right) \\ .5 = \left(\mathrm{Tan}\left(\frac{17\pi}{12}\right) = 2 + \sqrt{3}\right) & .6 = \left(\mathrm{Csc}\left(-\frac{19\pi}{12}\right) = \sqrt{2}\sqrt{3} - \sqrt{2}\right) \\ .7 = (\mathrm{Cot}((-195)^{o}) = -2 - \sqrt{3}) & .8 = \left(\mathrm{Sec}\left(-\frac{23\pi}{12}\right) = \sqrt{2}\sqrt{3} - \sqrt{2}\right) \end{bmatrix}, \quad , \begin{bmatrix} :) \\ :(\\ M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \\ :) \\ :(\end{bmatrix}$$

$$Ans2 = \begin{bmatrix} .1 = \left(2\,\mathrm{Cos}\left(\frac{\pi}{12}\right)^2 - 1 = \left(\mathrm{Cos}\left(\frac{\pi}{6}\right) = \frac{\sqrt{3}}{2}\right)\right) & .2 = (\mathrm{Sin}(110^{o})\,\mathrm{Cos}(20^{o}) - \mathrm{Cos}(110^{o})\,\mathrm{Sin}(20^{o}) = (\mathrm{Sin}(90^{o}) = 1)) \\ .3 = \left(\mathrm{Cos}\left(\frac{17\pi}{36}\right)\mathrm{Cos}\left(\frac{5\pi}{36}\right) + \mathrm{Sin}\left(\frac{17\pi}{36}\right)\mathrm{Sin}\left(\frac{5\pi}{36}\right) = \left(\mathrm{Cos}\left(\frac{\pi}{3}\right) = \frac{1}{2}\right)\right) & .4 = \left(1 - 2\,\mathrm{Sin}(22.5^{o})^2 = \left(\mathrm{Cos}(45^{o}) = \frac{\sqrt{2}}{2}\right)\right) \\ .5 = \left(\frac{2\,\mathrm{Tan}(15^{o})}{1 - \mathrm{Tan}(15^{o})^2} = \left(\mathrm{Tan}(30^{o}) = \frac{\sqrt{3}}{3}\right)\right) & .6 = \left(\mathrm{Cos}(15^{o})^2 - \mathrm{Sin}(15^{o})^2 = \left(\mathrm{Cos}(30^{o}) = \frac{\sqrt{3}}{2}\right)\right) \\ .7 = \left(\frac{\mathrm{Tan}(57^{o}) - \mathrm{Tan}(12^{o})}{1 + \mathrm{Tan}(57^{o})\,\mathrm{Tan}(12^{o})} = (\mathrm{Tan}(45^{o}) = 1)\right) & .8 = \left(\mathrm{Sin}(30^{o})\,\mathrm{Cos}(15^{o}) + \mathrm{Cos}(30^{o})\,\mathrm{Sin}(15^{o}) = \left(\mathrm{Sin}(45^{o}) = \frac{\sqrt{2}}{2}\right)\right) \\ .9 = \left(\frac{\mathrm{Tan}\left(\frac{5\pi}{36}\right) + \mathrm{Tan}\left(\frac{\pi}{36}\right)}{1 - \mathrm{Tan}\left(\frac{5\pi}{36}\right)\mathrm{Tan}\left(\frac{\pi}{36}\right)} = \left(\mathrm{Tan}\left(\frac{\pi}{6}\right) = \frac{\sqrt{3}}{3}\right)\right) & .10 = \left(2\,\mathrm{Sin}\left(\frac{\pi}{8}\right)\mathrm{Cos}\left(\frac{\pi}{8}\right) = \left(\mathrm{Sin}\left(\frac{\pi}{4}\right) = \frac{\sqrt{2}}{2}\right)\right) \end{bmatrix}, \quad , \begin{bmatrix} :) \\ :(\\ :) \\ :(\\ \left[\left[\begin{matrix} M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \end{matrix}\right]\right] \\ :) \\ :(\\ :) \\ :(\\ :) \\ :(\end{bmatrix}$$

$$Ans3 = \begin{bmatrix} .1 = \left(\mathrm{Sin}(\alpha) = \frac{\sqrt{3}}{2}\right) & .2 = \left(\mathrm{Cos}(\beta) = -\frac{2\sqrt{14}}{9}\right) \\ .3 = (\mathrm{Tan}(\alpha) = \sqrt{3}) & .4 = \left(\mathrm{Sin}(\beta - \alpha) = \frac{5}{18} + \frac{\sqrt{3}\sqrt{14}}{9}\right) \\ .5 = \left(\mathrm{Cos}(\alpha - \beta) = -\frac{\sqrt{14}}{9} + \frac{5\sqrt{3}}{18}\right) & .6 = \left(\mathrm{Tan}(\alpha + \beta) = -\frac{81\sqrt{3}}{19} + \frac{40\sqrt{14}}{19}\right) \\ .7 = \left(\mathrm{Sin}(2\beta) = -\frac{20\sqrt{14}}{81}\right) & .8 = (\mathrm{Tan}(2\alpha) = -\sqrt{3}) \end{bmatrix}, \quad , \; Ans4 = \begin{bmatrix} .1 = \left(\mathrm{Sin}(\alpha) = -\frac{\sqrt{5}}{3}\right) & .2 = \left(\mathrm{Cos}(\beta) = \frac{\sqrt{11}}{6}\right) \\ .3 = \left(\mathrm{Tan}(\beta) = -\frac{5\sqrt{11}}{11}\right) & .4 = \left(\mathrm{Sin}(\alpha + \beta) = -\frac{\sqrt{5}\sqrt{11}}{18} + \frac{5}{9}\right) \\ .5 = \left(\mathrm{Cos}(\beta - \alpha) = -\frac{\sqrt{11}}{9} + \frac{5\sqrt{5}}{18}\right) & .6 = \left(\mathrm{Tan}(\alpha - \beta) = -\frac{8\sqrt{5}}{9} - \frac{5\sqrt{11}}{9}\right) \\ .7 = \left(\mathrm{Cos}(2\alpha) = \frac{-1}{9}\right) & .8 = \left(\mathrm{Tan}(2\beta) = \frac{5\sqrt{11}}{7}\right) \end{bmatrix}, \quad , \begin{bmatrix} :) \\ :(\\ M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \\ :) \\ :(\end{bmatrix}$$

$$Ans5 = (\mathrm{Cos}(15^{o}) = (\mathrm{Sqrt}(0.9330) = 0.966)), \quad , \begin{bmatrix} M \\ U \\ T \end{bmatrix}$$

$$Ans6 = (\mathrm{Sin}(38^{o}) = (\mathrm{Sqrt}(0.3790) = 0.616)), \quad , \begin{bmatrix} M \\ U \\ T \end{bmatrix}$$

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$$Ans1 = \begin{bmatrix} .1 = \left(\mathrm{Sin}(105^o) = \frac{\sqrt{2}}{4} + \frac{\sqrt{2}\sqrt{3}}{4}\right) & .2 = \left(\mathrm{Cos}\left(\frac{\pi}{12}\right) = \frac{\sqrt{2}}{4} + \frac{\sqrt{2}\sqrt{3}}{4}\right) \\ .3 = \left(\mathrm{Tan}\left(\frac{5\pi}{12}\right) = 2 + \sqrt{3}\right) & .4 = \left(\mathrm{Cos}((\text{-}105)^o) = \frac{\sqrt{2}}{4} - \frac{\sqrt{2}\sqrt{3}}{4}\right) \\ .5 = \left(\mathrm{Sec}\left(-\frac{5\pi}{12}\right) = \sqrt{2}\sqrt{3} + \sqrt{2}\right) & .6 = (\mathrm{Tan}(195^o) = 2 - \sqrt{3}) \\ .7 = \left(\mathrm{Sin}\left(-\frac{19\pi}{12}\right) = \frac{\sqrt{2}}{4} + \frac{\sqrt{2}\sqrt{3}}{4}\right) & .8 = \left(\mathrm{Csc}\left(-\frac{\pi}{12}\right) = -\sqrt{2}\sqrt{3} - \sqrt{2}\right) \end{bmatrix}, \begin{bmatrix} :) \\ :(\\ M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \\ :) \\ :(\end{bmatrix}$$

$$Ans2 = \begin{bmatrix} .1 = \left(\mathrm{Sin}\left(\frac{\pi}{15}\right)\mathrm{Cos}\left(\frac{\pi}{10}\right) + \mathrm{Cos}\left(\frac{\pi}{15}\right)\mathrm{Sin}\left(\frac{\pi}{10}\right) = \left(\mathrm{Sin}\left(\frac{\pi}{6}\right) = \frac{1}{2}\right)\right) & .2 = \left(\mathrm{Sin}(57^o)\,\mathrm{Cos}(12^o) - \mathrm{Cos}(57^o)\,\mathrm{Sin}(12^o) = \left(\mathrm{Sin}(45^o) = \frac{\sqrt{2}}{2}\right)\right) \\ .3 = \left(\mathrm{Cos}(40^o)\,\mathrm{Cos}(10^o) + \mathrm{Sin}(40^o)\,\mathrm{Sin}(10^o) = \left(\mathrm{Cos}(30^o) = \frac{\sqrt{3}}{2}\right)\right) & .4 = \left(2\,\mathrm{Cos}(15^o)^2 - 1 = \left(\mathrm{Cos}(30^o) = \frac{\sqrt{3}}{2}\right)\right) \\ .5 = \left(2\,\mathrm{Sin}\left(\frac{\pi}{12}\right)\mathrm{Cos}\left(\frac{\pi}{12}\right) = \left(\mathrm{Sin}\left(\frac{\pi}{6}\right) = \frac{1}{2}\right)\right) & .6 = \left(\frac{\mathrm{Tan}\left(\frac{\pi}{12}\right) + \mathrm{Tan}\left(\frac{\pi}{6}\right)}{1 - \mathrm{Tan}\left(\frac{\pi}{12}\right)\mathrm{Tan}\left(\frac{\pi}{6}\right)} = \left(\mathrm{Tan}\left(\frac{\pi}{4}\right) = 1\right)\right) \\ .7 = \left(1 - 2\,\mathrm{Sin}(22.5^o)^2 = \left(\mathrm{Cos}(45^o) = \frac{\sqrt{2}}{2}\right)\right) & .8 = \left(\mathrm{Cos}\left(\frac{\pi}{8}\right)^2 - \mathrm{Sin}\left(\frac{\pi}{8}\right)^2 = \left(\mathrm{Cos}\left(\frac{\pi}{4}\right) = \frac{\sqrt{2}}{2}\right)\right) \\ .9 = \left(\frac{2\,\mathrm{Tan}\left(\frac{\pi}{12}\right)}{1 - \mathrm{Tan}\left(\frac{\pi}{12}\right)^2} = \left(\mathrm{Tan}\left(\frac{\pi}{6}\right) = \mathrm{Tan}\left(\frac{\pi}{6}\right)\right)\right) & .10 = (\mathrm{Cos}(75^o)\,\mathrm{Cos}(15^o) - \mathrm{Sin}(75^o)\,\mathrm{Sin}(15^o) = (\mathrm{Cos}(90^o) = 0)) \end{bmatrix}, \begin{bmatrix} :) \\ :(\\ :) \\ :(\\ \left[\left[\begin{matrix} M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \end{matrix}\right]\right] \\ :) \\ :(\\ :) \\ :(\\ :) \\ :(\end{bmatrix}$$

$$Ans3 = \begin{bmatrix} .1 = \left(\mathrm{Cos}(\alpha) = \frac{\sqrt{35}}{6}\right) & .2 = \left(\mathrm{Sin}(\beta) = -\frac{2\sqrt{10}}{7}\right) \\ .3 = \left(\mathrm{Tan}(\beta) = -\frac{2\sqrt{10}}{3}\right) & .4 = \left(\mathrm{Sin}(\beta - \alpha) = -\frac{\sqrt{35}\sqrt{10}}{21} - \frac{1}{14}\right) \\ .5 = \left(\mathrm{Cos}(\alpha - \beta) = \frac{\sqrt{35}}{14} - \frac{\sqrt{10}}{21}\right) & .6 = \left(\mathrm{Tan}(\alpha + \beta) = \frac{49\sqrt{5}\sqrt{7}}{275} - \frac{216\sqrt{5}\sqrt{2}}{275}\right) \\ .7 = \left(\mathrm{Cos}(2\beta) = \frac{\text{-}31}{49}\right) & .8 = \left(\mathrm{Tan}(2\alpha) = \frac{\sqrt{35}}{17}\right) \end{bmatrix}, \quad Ans4 = \begin{bmatrix} .1 = \left(\mathrm{Cos}(\alpha) = -\frac{2\sqrt{14}}{9}\right) & .2 = \left(\mathrm{Sin}(\beta) = \frac{\sqrt{5}}{3}\right) \\ .3 = \left(\mathrm{Tan}(\alpha) = \frac{5\sqrt{14}}{28}\right) & .4 = \left(\mathrm{Sin}(\beta - \alpha) = -\frac{2\sqrt{14}\sqrt{5}}{27} - \frac{10}{27}\right) \\ .5 = \left(\mathrm{Cos}(\alpha + \beta) = \frac{4\sqrt{14}}{27} + \frac{5\sqrt{5}}{27}\right) & .6 = \left(\mathrm{Tan}(\alpha - \beta) = \frac{10\sqrt{14}}{11} + \frac{18\sqrt{5}}{11}\right) \\ .7 = \left(\mathrm{Cos}(2\beta) = \frac{\text{-}1}{9}\right) & .8 = \left(\mathrm{Tan}(2\alpha) = \frac{20\sqrt{14}}{31}\right) \end{bmatrix}, \begin{bmatrix} :) \\ :(\\ M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \\ :) \\ :(\end{bmatrix}$$

$$Ans5 = (\mathrm{Sin}(20^o) = (\mathrm{Sqrt}(0.1170) = 0.342)), \begin{bmatrix} M \\ U \\ T \end{bmatrix}$$

$$Ans6 = (\mathrm{Cos}(38^o) = (\mathrm{Sqrt}(0.6210) = 0.788)), \begin{bmatrix} M \\ U \\ T \end{bmatrix}$$

$$Ans1 = \begin{bmatrix} .1 = \left(\cos\left(\frac{5\pi}{12}\right) = \frac{\sqrt{2}\sqrt{3}}{4} - \frac{\sqrt{2}}{4}\right) & .2 = \left(\sin(15^o) = \frac{\sqrt{2}\sqrt{3}}{4} - \frac{\sqrt{2}}{4}\right) \\ .3 = \left(\tan\left(\frac{7\pi}{12}\right) = -2 - \sqrt{3}\right) & .4 = \left(\sin((-165)^o) = \frac{\sqrt{2}}{4} - \frac{\sqrt{2}\sqrt{3}}{4}\right) \\ .5 = \left(\csc\left(-\frac{17\pi}{12}\right) = \sqrt{2}\sqrt{3} - \sqrt{2}\right) & .6 = (\sec((-105)^o) = -\sqrt{2}\sqrt{3} - \sqrt{2}) \\ .7 = \left(\cos\left(-\frac{23\pi}{12}\right) = \frac{\sqrt{2}}{4} + \frac{\sqrt{2}\sqrt{3}}{4}\right) & .8 = \left(\tan\left(-\frac{19\pi}{12}\right) = 2 + \sqrt{3}\right) \end{bmatrix}, \begin{bmatrix} :) \\ :(\\ M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \\ :) \\ :(\end{bmatrix}$$

$$Ans2 = \begin{bmatrix} .1 = \left(\sin\left(\frac{5\pi}{18}\right)\cos\left(\frac{\pi}{9}\right) - \cos\left(\frac{5\pi}{18}\right)\sin\left(\frac{\pi}{9}\right) = \left(\sin\left(\frac{\pi}{6}\right) = \frac{1}{2}\right)\right) & .2 = \left(2\cos\left(\frac{\pi}{8}\right)^2 - 1 = \left(\cos\left(\frac{\pi}{4}\right) = \frac{\sqrt{2}}{2}\right)\right) \\ .3 = \left(2\sin(22.5^o)\cos(22.5^o) = \left(\sin(45^o) = \frac{\sqrt{2}}{2}\right)\right) & .4 = \left(\frac{\tan\left(\frac{4\pi}{9}\right) - \tan\left(\frac{\pi}{9}\right)}{1 + \tan\left(\frac{4\pi}{9}\right)\tan\left(\frac{\pi}{9}\right)} = \left(\tan\left(\frac{\pi}{3}\right) = \sqrt{3}\right)\right) \\ .5 = (\cos(100^o)\cos(10^o) + \sin(100^o)\sin(10^o) = (\cos(90^o) = 0)) & .6 = \left(\cos(15^o)^2 - \sin(15^o)^2 = \left(\cos(30^o) = \frac{\sqrt{3}}{2}\right)\right) \\ .7 = \left(\frac{\tan(5^o) + \tan(25^o)}{1 - \tan(5^o)\tan(25^o)} = \left(\tan(30^o) = \frac{\sqrt{3}}{3}\right)\right) & .8 = \left(1 - 2\sin\left(\frac{\pi}{12}\right)^2 = \left(\cos\left(\frac{\pi}{6}\right) = \frac{\sqrt{3}}{2}\right)\right) \\ .9 = \left(\cos\left(\frac{\pi}{6}\right)\cos\left(\frac{\pi}{12}\right) - \sin\left(\frac{\pi}{6}\right)\sin\left(\frac{\pi}{12}\right) = \left(\cos\left(\frac{\pi}{4}\right) = \frac{\sqrt{2}}{2}\right)\right) & .10 = \left(\frac{2\tan(15^o)}{1 - \tan(15^o)^2} = \left(\tan(30^o) = \frac{\sqrt{3}}{3}\right)\right) \end{bmatrix}, \begin{bmatrix} :) \\ :(\\ :) \\ :(\\ \begin{bmatrix}\begin{bmatrix} M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \end{bmatrix}\end{bmatrix} \\ :) \\ :(\\ :) \\ :(\\ :) \\ :(\end{bmatrix}$$

$$Ans3 = \begin{bmatrix} .1 = \left(\sin(\alpha) = \frac{2\sqrt{2}}{3}\right) & .2 = \left(\cos(\beta) = \frac{\sqrt{3}}{2}\right) \\ .3 = (\tan(\alpha) = 2\sqrt{2}) & .4 = \left(\sin(\alpha + \beta) = \frac{\sqrt{2}\sqrt{3}}{3} - \frac{1}{6}\right) \\ .5 = \left(\cos(\beta - \alpha) = \frac{\sqrt{3}}{6} - \frac{\sqrt{2}}{3}\right) & .6 = \left(\tan(\alpha - \beta) = -\frac{9\sqrt{3}}{5} - \frac{8\sqrt{2}}{5}\right) \\ .7 = \left(\cos(2\alpha) = \frac{-7}{9}\right) & .8 = (\tan(2\beta) = -\sqrt{3}) \end{bmatrix}, \quad Ans4 = \begin{bmatrix} .1 = \left(\cos(\alpha) = -\frac{\sqrt{55}}{8}\right) & .2 = \left(\sin(\beta) = -\frac{\sqrt{21}}{5}\right) \\ .3 = \left(\tan(\beta) = \frac{\sqrt{21}}{2}\right) & .4 = \left(\sin(\alpha + \beta) = -\frac{3}{20} + \frac{\sqrt{55}\sqrt{21}}{40}\right) \\ .5 = \left(\cos(\alpha - \beta) = \frac{\sqrt{55}}{20} - \frac{3\sqrt{21}}{40}\right) & .6 = \left(\tan(\beta - \alpha) = \frac{128\sqrt{21}}{31} + \frac{75\sqrt{55}}{31}\right) \\ .7 = \left(\sin(2\alpha) = -\frac{3\sqrt{55}}{32}\right) & .8 = \left(\tan(2\beta) = -\frac{4\sqrt{21}}{17}\right) \end{bmatrix}, \begin{bmatrix} :) \\ :(\\ M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \\ :) \\ :(\end{bmatrix}$$

$$Ans5 = (\cos(40^o) = (\mathrm{Sqrt}(0.5870) = 0.766)), \quad \begin{bmatrix} M \\ U \\ T \end{bmatrix}$$

$$Ans6 = (\sin(3^o) = (\mathrm{Sqrt}(0.0025) = 0.052)), \quad \begin{bmatrix} M \\ U \\ T \end{bmatrix}$$

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$$Ans1 = \begin{bmatrix} .1 = \left(\text{Cos}\left(\frac{\pi}{12}\right) = \frac{\sqrt{2}}{4} + \frac{\sqrt{2}\sqrt{3}}{4}\right) & .2 = \left(\text{Sin}(105^o) = \frac{\sqrt{2}}{4} + \frac{\sqrt{2}\sqrt{3}}{4}\right) \\ .3 = (\text{Tan}(75^o) = 2 + \sqrt{3}) & .4 = \left(\text{Csc}\left(\frac{23\pi}{12}\right) = -\sqrt{2}\sqrt{3} - \sqrt{2}\right) \\ .5 = (\text{Sec}(255^o) = -\sqrt{2}\sqrt{3} - \sqrt{2}) & .6 = \left(\text{Cot}\left(-\frac{17\pi}{12}\right) = -2 + \sqrt{3}\right) \\ .7 = (\text{Tan}((-75)^o) = -2 - \sqrt{3}) & .8 = \left(\text{Sin}(285^o) = -\frac{\sqrt{2}}{4} - \frac{\sqrt{2}\sqrt{3}}{4}\right) \end{bmatrix}, \begin{bmatrix} :) \\ :(\\ M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \\ :) \\ :(\end{bmatrix}$$

$$Ans2 = \begin{bmatrix} .1 = \left(2\,\text{Sin}(22.5^o)\,\text{Cos}(22.5^o) = \left(\text{Sin}(45^o) = \frac{\sqrt{2}}{2}\right)\right) & .2 = \left(2\,\text{Cos}(15^o)^2 - 1 = \left(\text{Cos}(30^o) = \frac{\sqrt{3}}{2}\right)\right) \\ .3 = (\text{Sin}(100^o)\,\text{Cos}(10^o) - \text{Cos}(100^o)\,\text{Sin}(10^o) = (\text{Sin}(90^o) = 1)) & .4 = \left(\frac{\text{Tan}(85^o) - \text{Tan}(25^o)}{1 + \text{Tan}(85^o)\,\text{Tan}(25^o)} = (\text{Tan}(60^o) = \sqrt{3})\right) \\ .5 = \left(1 - 2\,\text{Sin}\left(\frac{\pi}{8}\right)^2 = \left(\text{Cos}\left(\frac{\pi}{4}\right) = \frac{\sqrt{2}}{2}\right)\right) & .6 = \left(\frac{2\,\text{Tan}\left(\frac{\pi}{8}\right)}{1 - \text{Tan}\left(\frac{\pi}{8}\right)^2} = \left(\text{Tan}\left(\frac{\pi}{4}\right) = \text{Tan}\left(\frac{\pi}{4}\right)\right)\right) \\ .7 = \left(\text{Cos}\left(\frac{\pi}{10}\right)\text{Cos}\left(\frac{\pi}{15}\right) - \text{Sin}\left(\frac{\pi}{10}\right)\text{Sin}\left(\frac{\pi}{15}\right) = \left(\text{Cos}\left(\frac{\pi}{6}\right) = \frac{\sqrt{3}}{2}\right)\right) & .8 = \left(\text{Cos}\left(\frac{\pi}{12}\right)^2 - \text{Sin}\left(\frac{\pi}{12}\right)^2 = \left(\text{Cos}\left(\frac{\pi}{6}\right) = \frac{\sqrt{3}}{2}\right)\right) \\ .9 = (\text{Sin}(70^o)\,\text{Cos}(20^o) + \text{Cos}(70^o)\,\text{Sin}(20^o) = (\text{Sin}(90^o) = 1)) & .10 = \left(\frac{\text{Tan}\left(\frac{\pi}{18}\right) + \text{Tan}\left(\frac{7\pi}{36}\right)}{1 - \text{Tan}\left(\frac{\pi}{18}\right)\text{Tan}\left(\frac{7\pi}{36}\right)} = \left(\text{Tan}\left(\frac{\pi}{4}\right) = 1\right)\right) \end{bmatrix}, \begin{bmatrix} :) \\ :(\\ :) \\ :(\\ \begin{bmatrix}\begin{bmatrix} M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \end{bmatrix}\end{bmatrix} \\ :) \\ :(\\ :) \\ :(\\ :) \\ :(\end{bmatrix}$$

$$Ans3 = \begin{bmatrix} .1 = \left(\text{Cos}(\alpha) = \frac{\sqrt{55}}{8}\right) & .2 = \left(\text{Sin}(\beta) = -\frac{2\sqrt{2}}{3}\right) \\ .3 = \left(\text{Tan}(\alpha) = \frac{3\sqrt{55}}{55}\right) & .4 = \left(\text{Sin}(\beta - \alpha) = -\frac{\sqrt{55}\sqrt{2}}{12} + \frac{1}{8}\right) \\ .5 = \left(\text{Cos}(\alpha - \beta) = -\frac{\sqrt{55}}{24} - \frac{\sqrt{2}}{4}\right) & .6 = \left(\text{Tan}(\alpha + \beta) = -\frac{27\sqrt{55}}{17} - \frac{128\sqrt{2}}{17}\right) \\ .7 = \left(\text{Cos}(2\alpha) = \frac{23}{32}\right) & .8 = \left(\text{Tan}(2\beta) = -\frac{4\sqrt{2}}{7}\right) \end{bmatrix}, \quad Ans4 = \begin{bmatrix} .1 = \left(\text{Cos}(\alpha) = -\frac{\sqrt{33}}{7}\right) & .2 = \left(\text{Sin}(\beta) = -\frac{\sqrt{65}}{9}\right) \\ .3 = \left(\text{Tan}(\alpha) = -\frac{4\sqrt{33}}{33}\right) & .4 = \left(\text{Sin}(\alpha + \beta) = \frac{16}{63} + \frac{\sqrt{33}\sqrt{65}}{63}\right) \\ .5 = \left(\text{Cos}(\beta - \alpha) = -\frac{4\sqrt{33}}{63} - \frac{4\sqrt{65}}{63}\right) & .6 = \left(\text{Tan}(\alpha - \beta) = \frac{81\sqrt{33}}{128} - \frac{49\sqrt{65}}{128}\right) \\ .7 = \left(\text{Cos}(2\alpha) = \frac{17}{49}\right) & .8 = \left(\text{Tan}(2\beta) = \frac{8\sqrt{65}}{49}\right) \end{bmatrix}, \begin{bmatrix} :) \\ :(\\ M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \\ :) \\ :(\end{bmatrix}$$

$$Ans5 = (\text{Cos}(19^o) = (\text{Sqrt}(0.8940) = 0.946)), \begin{bmatrix} M \\ U \\ T \end{bmatrix}$$

$$Ans6 = (\text{Sin}(7^o) = (\text{Sqrt}(0.0150) = 0.122)), \begin{bmatrix} M \\ U \\ T \end{bmatrix}$$

$$Ans1 = \begin{bmatrix} .1 = \left(\mathrm{Cos}(75^o) = \frac{\sqrt{2}\sqrt{3}}{4} - \frac{\sqrt{2}}{4}\right) & .2 = \left(\mathrm{Sin}\left(\frac{7\pi}{12}\right) = \frac{\sqrt{2}}{4} + \frac{\sqrt{2}\sqrt{3}}{4}\right) \\ .3 = \left(\mathrm{Tan}\left(\frac{\pi}{12}\right) = 2 - \sqrt{3}\right) & .4 = \left(\mathrm{Csc}\left(\frac{11\pi}{12}\right) = \sqrt{2}\sqrt{3} + \sqrt{2}\right) \\ .5 = (\mathrm{Sec}((-105)^o) = -\sqrt{2}\sqrt{3} - \sqrt{2}) & .6 = \left(\mathrm{Cot}\left(-\frac{17\pi}{12}\right) = -2 + \sqrt{3}\right) \\ .7 = \left(\mathrm{Sin}((-195)^o) = \frac{\sqrt{2}\sqrt{3}}{4} - \frac{\sqrt{2}}{4}\right) & .8 = (\mathrm{Tan}((-75)^o) = -2 - \sqrt{3}) \end{bmatrix}, \begin{bmatrix} :) \\ :(\\ M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \\ :) \\ :(\end{bmatrix}$$

$$Ans2 = \begin{bmatrix} .1 = \left(2\,\mathrm{Cos}(15^o)^2 - 1 = \left(\mathrm{Cos}(30^o) = \frac{\sqrt{3}}{2}\right)\right) & .2 = \left(\mathrm{Cos}(80^o)\,\mathrm{Cos}(20^o) + \mathrm{Sin}(80^o)\,\mathrm{Sin}(20^o) = \left(\mathrm{Cos}(60^o) = \frac{1}{2}\right)\right) \\ .3 = \left(2\,\mathrm{Sin}(22.5^o)\,\mathrm{Cos}(22.5^o) = \left(\mathrm{Sin}(45^o) = \frac{\sqrt{2}}{2}\right)\right) & .4 = \left(\frac{2\,\mathrm{Tan}(15^o)}{1 - \mathrm{Tan}(15^o)^2} = \left(\mathrm{Tan}(30^o) = \frac{\sqrt{3}}{3}\right)\right) \\ .5 = \left(\frac{\mathrm{Tan}\left(\frac{\pi}{18}\right) + \mathrm{Tan}\left(\frac{\pi}{9}\right)}{1 - \mathrm{Tan}\left(\frac{\pi}{18}\right)\mathrm{Tan}\left(\frac{\pi}{9}\right)} = \left(\mathrm{Tan}\left(\frac{\pi}{6}\right) = \frac{\sqrt{3}}{3}\right)\right) & .6 = \left(\mathrm{Sin}(48^o)\,\mathrm{Cos}(12^o) + \mathrm{Cos}(48^o)\,\mathrm{Sin}(12^o) = \left(\mathrm{Sin}(60^o) = \frac{\sqrt{3}}{2}\right)\right) \\ .7 = \left(1 - 2\,\mathrm{Sin}\left(\frac{\pi}{12}\right)^2 = \left(\mathrm{Cos}\left(\frac{\pi}{6}\right) = \frac{\sqrt{3}}{2}\right)\right) & .8 = \left(\mathrm{Sin}(42^o)\,\mathrm{Cos}(12^o) - \mathrm{Cos}(42^o)\,\mathrm{Sin}(12^o) = \left(\mathrm{Sin}(30^o) = \frac{1}{2}\right)\right) \\ .9 = \left(\mathrm{Cos}\left(\frac{\pi}{8}\right)^2 - \mathrm{Sin}\left(\frac{\pi}{8}\right)^2 = \left(\mathrm{Cos}\left(\frac{\pi}{4}\right) = \frac{\sqrt{2}}{2}\right)\right) & .10 = \left(\mathrm{Cos}\left(\frac{\pi}{9}\right)\mathrm{Cos}\left(\frac{7\pi}{18}\right) - \mathrm{Sin}\left(\frac{\pi}{9}\right)\mathrm{Sin}\left(\frac{7\pi}{18}\right) = \left(\mathrm{Cos}\left(\frac{\pi}{2}\right) = 0\right)\right) \end{bmatrix}, \begin{bmatrix} :) \\ :(\\ :) \\ :(\\ \begin{bmatrix}\begin{bmatrix} M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \end{bmatrix}\end{bmatrix} \\ :) \\ :(\\ :) \\ :(\\ :) \\ :(\end{bmatrix}$$

$$Ans3 = \begin{bmatrix} .1 = \left(\mathrm{Cos}(\alpha) = \frac{2\sqrt{2}}{3}\right) & .2 = \left(\mathrm{Sin}(\beta) = -\frac{\sqrt{21}}{5}\right) \\ .3 = \left(\mathrm{Tan}(\alpha) = \frac{\sqrt{2}}{4}\right) & .4 = \left(\mathrm{Sin}(\beta - \alpha) = -\frac{2\sqrt{2}\sqrt{21}}{15} - \frac{2}{15}\right) \\ .5 = \left(\mathrm{Cos}(\alpha - \beta) = \frac{4\sqrt{2}}{15} - \frac{\sqrt{21}}{15}\right) & .6 = \left(\mathrm{Tan}(\alpha + \beta) = \frac{50\sqrt{2}}{11} - \frac{18\sqrt{21}}{11}\right) \\ .7 = \left(\mathrm{Cos}(2\beta) = \frac{-17}{25}\right) & .8 = \left(\mathrm{Tan}(2\alpha) = \frac{4\sqrt{2}}{7}\right) \end{bmatrix}, \quad Ans4 = \begin{bmatrix} .1 = \left(\mathrm{Sin}(\alpha) = -\frac{2\sqrt{6}}{5}\right) & .2 = \left(\mathrm{Cos}(\beta) = -\frac{\sqrt{65}}{9}\right) \\ .3 = \left(\mathrm{Tan}(\beta) = -\frac{4\sqrt{65}}{65}\right) & .4 = \left(\mathrm{Sin}(\alpha + \beta) = \frac{2\sqrt{6}\sqrt{65}}{45} - \frac{4}{45}\right) \\ .5 = \left(\mathrm{Cos}(\alpha - \beta) = \frac{\sqrt{65}}{45} - \frac{8\sqrt{6}}{45}\right) & .6 = \left(\mathrm{Tan}(\beta - \alpha) = \frac{100\sqrt{65}}{319} + \frac{162\sqrt{6}}{319}\right) \\ .7 = \left(\mathrm{Cos}(2\beta) = \frac{49}{81}\right) & .8 = \left(\mathrm{Tan}(2\alpha) = -\frac{4\sqrt{6}}{23}\right) \end{bmatrix}, \begin{bmatrix} :) \\ :(\\ M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \\ :) \\ :(\end{bmatrix}$$

$$Ans5 = (\mathrm{Cos}(31^o) = (\mathrm{Sqrt}(0.7345) = 0.857)), \begin{bmatrix} M \\ U \\ T \end{bmatrix}$$

$$Ans6 = (\mathrm{Sin}(9^o) = (\mathrm{Sqrt}(0.0245) = 0.156)), \begin{bmatrix} M \\ U \\ T \end{bmatrix}$$

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$$Ans1 = \begin{bmatrix} .1 = \left(\mathrm{Cos}\left(\frac{\pi}{12}\right) = \frac{\sqrt{2}}{4} + \frac{\sqrt{2}\sqrt{3}}{4}\right) & .2 = \left(\mathrm{Sin}(75^o) = \frac{\sqrt{2}}{4} + \frac{\sqrt{2}\sqrt{3}}{4}\right) \\ .3 = \left(\mathrm{Tan}\left(\frac{7\pi}{12}\right) = -2 - \sqrt{3}\right) & .4 = (\mathrm{Tan}((-105)^o) = 2 + \sqrt{3}) \\ .5 = \left(\mathrm{Csc}\left(\frac{23\pi}{12}\right) = -\sqrt{2}\sqrt{3} - \sqrt{2}\right) & .6 = \left(\mathrm{Sec}\left(-\frac{5\pi}{12}\right) = \sqrt{2}\sqrt{3} + \sqrt{2}\right) \\ .7 = (\mathrm{Cot}(285^o) = -2 + \sqrt{3}) & .8 = \left(\mathrm{Cos}(195^o) = -\frac{\sqrt{2}}{4} - \frac{\sqrt{2}\sqrt{3}}{4}\right) \end{bmatrix}, \begin{bmatrix} :) \\ :(\\ M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \\ :) \\ :(\end{bmatrix}$$

$$Ans2 = \begin{bmatrix} .1 = \left(\left(1 - 2\,\mathrm{Sin}\left(\frac{\pi}{12}\right)^2\right) = \left(\mathrm{Cos}\left(\frac{\pi}{6}\right) = \frac{\sqrt{3}}{2}\right)\right) & .2 = \left(\mathrm{Cos}(22.5^o)^2 - \mathrm{Sin}(22.5^o)^2 = \left(\mathrm{Cos}(45^o) = \frac{\sqrt{2}}{2}\right)\right) \\ .3 = \left(2\,\mathrm{Cos}\left(\frac{\pi}{8}\right)^2 - 1 = \left(\mathrm{Cos}\left(\frac{\pi}{4}\right) = \frac{\sqrt{2}}{2}\right)\right) & .4 = \left(\frac{\mathrm{Tan}(85^o) - \mathrm{Tan}(25^o)}{1 + \mathrm{Tan}(85^o)\,\mathrm{Tan}(25^o)} = (\mathrm{Tan}(60^o) = \sqrt{3})\right) \\ .5 = \left(\frac{2\,\mathrm{Tan}\left(\frac{\pi}{12}\right)}{1 - \mathrm{Tan}\left(\frac{\pi}{12}\right)^2} = \left(\mathrm{Tan}\left(\frac{\pi}{6}\right) = \mathrm{Tan}\left(\frac{\pi}{6}\right)\right)\right) & .6 = \left(\frac{\mathrm{Tan}\left(\frac{\pi}{12}\right) + \mathrm{Tan}\left(\frac{\pi}{6}\right)}{1 - \mathrm{Tan}\left(\frac{\pi}{12}\right)\mathrm{Tan}\left(\frac{\pi}{6}\right)} = \left(\mathrm{Tan}\left(\frac{\pi}{4}\right) = 1\right)\right) \\ .7 = \left(\mathrm{Sin}(35^o)\,\mathrm{Cos}(5^o) - \mathrm{Cos}(35^o)\,\mathrm{Sin}(5^o) = \left(\mathrm{Sin}(30^o) = \frac{1}{2}\right)\right) & .8 = (\mathrm{Cos}(78^o)\,\mathrm{Cos}(12^o) - \mathrm{Sin}(78^o)\,\mathrm{Sin}(12^o) = (\mathrm{Cos}(90^o) = 0)) \\ .9 = \left(\mathrm{Cos}\left(\frac{7\pi}{12}\right)\mathrm{Cos}\left(\frac{\pi}{12}\right) + \mathrm{Sin}\left(\frac{7\pi}{12}\right)\mathrm{Sin}\left(\frac{\pi}{12}\right) = \left(\mathrm{Cos}\left(\frac{\pi}{2}\right) = 0\right)\right) & .10 = \left(2\,\mathrm{Sin}(15^o)\,\mathrm{Cos}(15^o) = \left(\mathrm{Sin}(30^o) = \frac{1}{2}\right)\right) \end{bmatrix}, \begin{bmatrix} :) \\ :(\\ :) \\ :(\\ \begin{bmatrix}\begin{bmatrix} M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \end{bmatrix}\end{bmatrix} \\ :) \\ :(\\ :) \\ :(\\ :) \\ :(\end{bmatrix}$$

$$Ans3 = \begin{bmatrix} .1 = \left(\mathrm{Cos}(\alpha) = \frac{2\sqrt{6}}{7}\right) & .2 = \left(\mathrm{Sin}(\beta) = \frac{2\sqrt{2}}{3}\right) \\ .3 = \left(\mathrm{Tan}(\alpha) = \frac{5\sqrt{6}}{12}\right) & .4 = \left(\mathrm{Sin}(\beta - \alpha) = \frac{4\sqrt{6}\sqrt{2}}{21} + \frac{5}{21}\right) \\ .5 = \left(\mathrm{Cos}(\alpha + \beta) = -\frac{2\sqrt{6}}{21} - \frac{10\sqrt{2}}{21}\right) & .6 = \left(\mathrm{Tan}(\alpha - \beta) = -\frac{45\sqrt{2}\sqrt{3}}{88} - \frac{49\sqrt{2}}{88}\right) \\ .7 = \left(\mathrm{Sin}(2\beta) = -\frac{4\sqrt{2}}{9}\right) & .8 = (\mathrm{Tan}(2\alpha) = -20\sqrt{6}) \end{bmatrix}, \quad Ans4 = \begin{bmatrix} .1 = \left(\mathrm{Sin}(\alpha) = -\frac{\sqrt{11}}{6}\right) & .2 = \left(\mathrm{Cos}(\beta) = \frac{3}{5}\right) \\ .3 = \left(\mathrm{Tan}(\beta) = \frac{-4}{3}\right) & .4 = \left(\mathrm{Sin}(\alpha - \beta) = -\frac{\sqrt{11}}{10} - \frac{2}{3}\right) \\ .5 = \left(\mathrm{Cos}(\beta - \alpha) = -\frac{1}{2} + \frac{2\sqrt{11}}{15}\right) & .6 = \left(\mathrm{Tan}(\alpha + \beta) = \frac{125\sqrt{11}}{49} - \frac{432}{49}\right) \\ .7 = \left(\mathrm{Cos}(2\alpha) = \frac{7}{18}\right) & .8 = \left(\mathrm{Tan}(2\beta) = \frac{24}{7}\right) \end{bmatrix}, \begin{bmatrix} :) \\ :(\\ M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \\ :) \\ :(\end{bmatrix}$$

$$Ans5 = (\mathrm{Cos}(32^o) = (\mathrm{Sqrt}(0.7190) = 0.848)), \quad \begin{bmatrix} M \\ U \\ T \end{bmatrix}$$

$$Ans6 = (\mathrm{Sin}(17^o) = (\mathrm{Sqrt}(0.0855) = 0.292)), \quad \begin{bmatrix} M \\ U \\ T \end{bmatrix}$$

$$Ans1 = \begin{bmatrix} .1 = \left(\operatorname{Sin}\left(\frac{5\pi}{12}\right) = \frac{\sqrt{2}}{4} + \frac{\sqrt{2}\sqrt{3}}{4}\right) & .2 = \left(\operatorname{Cos}(15^o) = \frac{\sqrt{2}}{4} + \frac{\sqrt{2}\sqrt{3}}{4}\right) \\ .3 = (\operatorname{Tan}(105^o) = -2 - \sqrt{3}) & .4 = \left(\operatorname{Sin}\left(\frac{19\pi}{12}\right) = -\frac{\sqrt{2}}{4} - \frac{\sqrt{2}\sqrt{3}}{4}\right) \\ .5 = (\operatorname{Sec}((-285)^o) = \sqrt{2}\sqrt{3} + \sqrt{2}) & .6 = \left(\operatorname{Cos}((-195)^o) = -\frac{\sqrt{2}}{4} - \frac{\sqrt{2}\sqrt{3}}{4}\right) \\ .7 = \left(\operatorname{Tan}\left(-\frac{11\pi}{12}\right) = 2 - \sqrt{3}\right) & .8 = (\operatorname{Csc}((-105)^o) = -\sqrt{2}\sqrt{3} + \sqrt{2}) \end{bmatrix}, \begin{bmatrix} :) \\ :(\\ M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \\ :) \\ :(\end{bmatrix}$$

$$Ans2 = \begin{bmatrix} .1 = \left(\frac{\operatorname{Tan}\left(\frac{7\pi}{30}\right) - \operatorname{Tan}\left(\frac{\pi}{15}\right)}{1 + \operatorname{Tan}\left(\frac{7\pi}{30}\right)\operatorname{Tan}\left(\frac{\pi}{15}\right)} = \left(\operatorname{Tan}\left(\frac{\pi}{6}\right) = \frac{\sqrt{3}}{3}\right)\right) & .2 = \left(2\operatorname{Sin}\left(\frac{\pi}{12}\right)\operatorname{Cos}\left(\frac{\pi}{12}\right) = \left(\operatorname{Sin}\left(\frac{\pi}{6}\right) = \frac{1}{2}\right)\right) \\ .3 = \left(\operatorname{Sin}\left(\frac{\pi}{3}\right)\operatorname{Cos}\left(\frac{\pi}{12}\right) - \operatorname{Cos}\left(\frac{\pi}{3}\right)\operatorname{Sin}\left(\frac{\pi}{12}\right) = \left(\operatorname{Sin}\left(\frac{\pi}{4}\right) = \frac{\sqrt{2}}{2}\right)\right) & .4 = \left(2\operatorname{Cos}(22.5^o)^2 - 1 = \left(\operatorname{Cos}(45^o) = \frac{\sqrt{2}}{2}\right)\right) \\ .5 = \left(\operatorname{Cos}(85^o)\operatorname{Cos}(25^o) + \operatorname{Sin}(85^o)\operatorname{Sin}(25^o) = \left(\operatorname{Cos}(60^o) = \frac{1}{2}\right)\right) & .6 = \left(\frac{2\operatorname{Tan}\left(\frac{\pi}{8}\right)}{1 - \operatorname{Tan}\left(\frac{\pi}{8}\right)^2} = \left(\operatorname{Tan}\left(\frac{\pi}{4}\right) = \operatorname{Tan}\left(\frac{\pi}{4}\right)\right)\right) \\ .7 = \left(\frac{\operatorname{Tan}(35^o) + \operatorname{Tan}(10^o)}{1 - \operatorname{Tan}(35^o)\operatorname{Tan}(10^o)} = (\operatorname{Tan}(45^o) = 1)\right) & .8 = \left(\operatorname{Cos}(15^o)^2 - \operatorname{Sin}(15^o)^2 = \left(\operatorname{Cos}(30^o) = \frac{\sqrt{3}}{2}\right)\right) \\ .9 = \left(\operatorname{Sin}\left(\frac{\pi}{15}\right)\operatorname{Cos}\left(\frac{13\pi}{30}\right) + \operatorname{Cos}\left(\frac{\pi}{15}\right)\operatorname{Sin}\left(\frac{13\pi}{30}\right) = \left(\operatorname{Sin}\left(\frac{\pi}{2}\right) = 1\right)\right) & .10 = \left(1 - 2\operatorname{Sin}\left(\frac{\pi}{8}\right)^2 = \left(\operatorname{Cos}\left(\frac{\pi}{4}\right) = \frac{\sqrt{2}}{2}\right)\right) \end{bmatrix}, \begin{bmatrix} :) \\ :(\\ :) \\ :(\\ \left[\left[\begin{matrix} M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \end{matrix}\right]\right] \\ :) \\ :(\\ :) \\ :(\\ :) \\ :(\end{bmatrix}$$

$$Ans3 = \begin{bmatrix} .1 = \left(\operatorname{Cos}(\alpha) = \frac{3\sqrt{5}}{7}\right) & .2 = \left(\operatorname{Sin}(\beta) = -\frac{\sqrt{21}}{5}\right) \\ .3 = \left(\operatorname{Tan}(\alpha) = \frac{2\sqrt{5}}{15}\right) & .4 = \left(\operatorname{Sin}(\beta - \alpha) = -\frac{3\sqrt{5}\sqrt{21}}{35} - \frac{4}{35}\right) \\ .5 = \left(\operatorname{Cos}(\alpha - \beta) = \frac{6\sqrt{5}}{35} - \frac{2\sqrt{21}}{35}\right) & .6 = \left(\operatorname{Tan}(\alpha + \beta) = \frac{25\sqrt{5}}{16} - \frac{49\sqrt{21}}{48}\right) \\ .7 = \left(\operatorname{Sin}(2\alpha) = \frac{12\sqrt{5}}{49}\right) & .8 = \left(\operatorname{Tan}(2\beta) = \frac{4\sqrt{21}}{17}\right) \end{bmatrix}, \quad Ans4 = \begin{bmatrix} .1 = \left(\operatorname{Cos}(\alpha) = -\frac{2\sqrt{6}}{5}\right) & .2 = \left(\operatorname{Sin}(\beta) = \frac{\sqrt{3}}{2}\right) \\ .3 = (\operatorname{Tan}(\beta) = -\sqrt{3}) & .4 = \left(\operatorname{Sin}(\beta - \alpha) = -\frac{\sqrt{6}\sqrt{3}}{5} - \frac{1}{10}\right) \\ .5 = \left(\operatorname{Cos}(\alpha - \beta) = \frac{\sqrt{6}}{5} - \frac{\sqrt{3}}{10}\right) & .6 = \left(\operatorname{Tan}(\alpha + \beta) = \frac{8\sqrt{2}\sqrt{3}}{21} - \frac{25\sqrt{3}}{21}\right) \\ .7 = \left(\operatorname{Sin}(2\beta) = -\frac{\sqrt{3}}{2}\right) & .8 = \left(\operatorname{Tan}(2\alpha) = \frac{4\sqrt{6}}{23}\right) \end{bmatrix}, \begin{bmatrix} :) \\ :(\\ M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \\ :) \\ :(\end{bmatrix}$$

$$Ans5 = (\operatorname{Cos}(43^o) = (\operatorname{Sqrt}(0.5350) = 0.731)), \begin{bmatrix} M \\ U \\ T \end{bmatrix}$$

$$Ans6 = (\operatorname{Sin}(8^o) = (\operatorname{Sqrt}(0.0195) = 0.139)), \begin{bmatrix} M \\ U \\ T \end{bmatrix}$$

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$$Ans1 = \begin{bmatrix} .1 = \left(\text{Sin}\left(\frac{\pi}{12}\right) = \frac{\sqrt{2}\sqrt{3}}{4} - \frac{\sqrt{2}}{4}\right) & .2 = \left(\text{Cos}(105^o) = \frac{\sqrt{2}}{4} - \frac{\sqrt{2}\sqrt{3}}{4}\right) \\ .3 = (\text{Tan}(75^o) = 2 + \sqrt{3}) & .4 = (\text{Tan}((-255)^o) = -2 - \sqrt{3}) \\ .5 = \left(\text{Sec}\left(\frac{13\pi}{12}\right) = -\sqrt{2}\sqrt{3} + \sqrt{2}\right) & .6 = \left(\text{Sin}\left(-\frac{7\pi}{12}\right) = -\frac{\sqrt{2}}{4} - \frac{\sqrt{2}\sqrt{3}}{4}\right) \\ .7 = (\text{Csc}(345^o) = -\sqrt{2}\sqrt{3} - \sqrt{2}) & .8 = (\text{Cot}((-195)^o) = -2 - \sqrt{3}) \end{bmatrix}, \begin{bmatrix} :) \\ :(\\ M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \\ :) \\ :(\end{bmatrix}$$

$$Ans2 = \begin{bmatrix} .1 = \left(\frac{\text{Tan}(5^o) + \text{Tan}(25^o)}{1 - \text{Tan}(5^o)\,\text{Tan}(25^o)} = \left(\text{Tan}(30^o) = \frac{\sqrt{3}}{3}\right)\right) & .2 = \left(\text{Sin}\left(\frac{19\pi}{60}\right)\text{Cos}\left(\frac{\pi}{15}\right) - \text{Cos}\left(\frac{19\pi}{60}\right)\text{Sin}\left(\frac{\pi}{15}\right) = \left(\text{Sin}\left(\frac{\pi}{4}\right) = \frac{\sqrt{2}}{2}\right)\right) \\ .3 = \left(2\,\text{Sin}\left(\frac{\pi}{12}\right)\text{Cos}\left(\frac{\pi}{12}\right) = \left(\text{Sin}\left(\frac{\pi}{6}\right) = \frac{1}{2}\right)\right) & .4 = \left(1 - 2\,\text{Sin}(15^o)^2 = \left(\text{Cos}(30^o) = \frac{\sqrt{3}}{2}\right)\right) \\ .5 = \left(\text{Sin}(48^o)\,\text{Cos}(12^o) + \text{Cos}(48^o)\,\text{Sin}(12^o) = \left(\text{Sin}(60^o) = \frac{\sqrt{3}}{2}\right)\right) & .6 = \left(\text{Cos}(22.5^o)^2 - \text{Sin}(22.5^o)^2 = \left(\text{Cos}(45^o) = \frac{\sqrt{2}}{2}\right)\right) \\ .7 = \left(\text{Cos}\left(\frac{7\pi}{36}\right)\text{Cos}\left(\frac{\pi}{18}\right) - \text{Sin}\left(\frac{7\pi}{36}\right)\text{Sin}\left(\frac{\pi}{18}\right) = \left(\text{Cos}\left(\frac{\pi}{4}\right) = \frac{\sqrt{2}}{2}\right)\right) & .8 = \left(\text{Cos}(85^o)\,\text{Cos}(25^o) + \text{Sin}(85^o)\,\text{Sin}(25^o) = \left(\text{Cos}(60^o) = \frac{1}{2}\right)\right) \\ .9 = \left(\frac{2\,\text{Tan}(22.5^o)}{1 - \text{Tan}(22.5^o)^2} = (\text{Tan}(45^o) = 1)\right) & .10 = \left(2\,\text{Cos}\left(\frac{\pi}{8}\right)^2 - 1 = \left(\text{Cos}\left(\frac{\pi}{4}\right) = \frac{\sqrt{2}}{2}\right)\right) \end{bmatrix}, \begin{bmatrix} :) \\ :(\\ :) \\ :(\\ [[[M \; a \; t \; h \; @ \; M \; U \; T]]] \\ :) \\ :(\\ :) \\ :(\\ :) \\ :(\end{bmatrix}$$

$$Ans3 = \begin{bmatrix} .1 = \left(\text{Sin}(\alpha) = \frac{\sqrt{33}}{7}\right) & .2 = \left(\text{Cos}(\beta) = \frac{\sqrt{5}}{3}\right) \\ .3 = \left(\text{Tan}(\beta) = -\frac{2\sqrt{5}}{5}\right) & .4 = \left(\text{Sin}(\beta - \alpha) = -\frac{8}{21} - \frac{\sqrt{33}\sqrt{5}}{21}\right) \\ .5 = \left(\text{Cos}(\alpha + \beta) = \frac{4\sqrt{5}}{21} + \frac{2\sqrt{33}}{21}\right) & .6 = \left(\text{Tan}(\alpha - \beta) = -\frac{9\sqrt{33}}{13} - \frac{49\sqrt{5}}{26}\right) \\ .7 = \left(\text{Cos}(2\alpha) = \frac{-17}{49}\right) & .8 = (\text{Tan}(2\beta) = -4\sqrt{5}) \end{bmatrix}, \; Ans4 = \begin{bmatrix} .1 = \left(\text{Sin}(\alpha) = -\frac{2\sqrt{10}}{7}\right) & .2 = \left(\text{Cos}(\beta) = -\frac{\sqrt{55}}{8}\right) \\ .3 = \left(\text{Tan}(\alpha) = \frac{2\sqrt{10}}{3}\right) & .4 = \left(\text{Sin}(\alpha + \beta) = \frac{\sqrt{10}\sqrt{55}}{28} - \frac{9}{56}\right) \\ .5 = \left(\text{Cos}(\beta - \alpha) = \frac{3\sqrt{55}}{56} - \frac{3\sqrt{10}}{28}\right) & .6 = \left(\text{Tan}(\alpha - \beta) = \frac{128\sqrt{5}\sqrt{2}}{45} + \frac{49\sqrt{5}\sqrt{11}}{45}\right) \\ .7 = \left(\text{Sin}(2\beta) = -\frac{3\sqrt{55}}{32}\right) & .8 = \left(\text{Tan}(2\alpha) = -\frac{12\sqrt{10}}{31}\right) \end{bmatrix}, \begin{bmatrix} :) \\ :(\\ M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \\ :) \\ :(\end{bmatrix}$$

$$Ans5 = (\text{Sin}(15^o) = (\text{Sqrt}(0.0670) = 0.259)), \; \begin{bmatrix} M \\ U \\ T \end{bmatrix}$$

$$Ans6 = (\text{Cos}(43^o) = (\text{Sqrt}(0.5350) = 0.731)), \; \begin{bmatrix} M \\ U \\ T \end{bmatrix}$$

$$Ans1 = \begin{bmatrix} .1 = \left(\mathrm{Sin}\left(\frac{5\pi}{12}\right) = \frac{\sqrt{2}}{4} + \frac{\sqrt{2}\sqrt{3}}{4}\right) & .2 = \left(\mathrm{Cos}(15^o) = \frac{\sqrt{2}}{4} + \frac{\sqrt{2}\sqrt{3}}{4}\right) \\ .3 = \left(\mathrm{Tan}\left(\frac{7\pi}{12}\right) = -2 - \sqrt{3}\right) & .4 = \left(\mathrm{Csc}\left(-\frac{13\pi}{12}\right) = \sqrt{2}\sqrt{3} + \sqrt{2}\right) \\ .5 = (\mathrm{Sec}((-345)^o) = \sqrt{2}\sqrt{3} - \sqrt{2}) & .6 = \left(\mathrm{Tan}\left(\frac{19\pi}{12}\right) = -2 - \sqrt{3}\right) \\ .7 = (\mathrm{Cot}(195^o) = 2 + \sqrt{3}) & .8 = \left(\mathrm{Cos}\left(-\frac{7\pi}{12}\right) = \frac{\sqrt{2}}{4} - \frac{\sqrt{2}\sqrt{3}}{4}\right) \end{bmatrix}, \begin{bmatrix} :) \\ :(\\ M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \\ :) \\ :(\end{bmatrix}$$

$$Ans2 = \begin{bmatrix} .1 = \left(\frac{2\,\mathrm{Tan}\left(\frac{\pi}{12}\right)}{1 - \mathrm{Tan}\left(\frac{\pi}{12}\right)^2} = \left(\mathrm{Tan}\left(\frac{\pi}{6}\right) = \mathrm{Tan}\left(\frac{\pi}{6}\right)\right)\right) & .2 = \left(2\,\mathrm{Cos}\left(\frac{\pi}{12}\right)^2 - 1 = \left(\mathrm{Cos}\left(\frac{\pi}{6}\right) = \frac{\sqrt{3}}{2}\right)\right) \\ .3 = \left(1 - 2\,\mathrm{Sin}(22.5^o)^2 = \left(\mathrm{Cos}(45^o) = \frac{\sqrt{2}}{2}\right)\right) & .4 = \left(\mathrm{Cos}\left(\frac{\pi}{8}\right)^2 - \mathrm{Sin}\left(\frac{\pi}{8}\right)^2 = \left(\mathrm{Cos}\left(\frac{\pi}{4}\right) = \frac{\sqrt{2}}{2}\right)\right) \\ .5 = \left(\mathrm{Cos}\left(\frac{4\pi}{9}\right)\mathrm{Cos}\left(\frac{\pi}{9}\right) + \mathrm{Sin}\left(\frac{4\pi}{9}\right)\mathrm{Sin}\left(\frac{\pi}{9}\right) = \left(\mathrm{Cos}\left(\frac{\pi}{3}\right) = \frac{1}{2}\right)\right) & .6 = \left(\frac{\mathrm{Tan}(35^o) + \mathrm{Tan}(25^o)}{1 - \mathrm{Tan}(35^o)\,\mathrm{Tan}(25^o)} = (\mathrm{Tan}(60^o) = \sqrt{3})\right) \\ .7 = \left(\mathrm{Sin}\left(\frac{5\pi}{9}\right)\mathrm{Cos}\left(\frac{\pi}{18}\right) - \mathrm{Cos}\left(\frac{5\pi}{9}\right)\mathrm{Sin}\left(\frac{\pi}{18}\right) = \left(\mathrm{Sin}\left(\frac{\pi}{2}\right) = 1\right)\right) & .8 = \left(\frac{\mathrm{Tan}(35^o) - \mathrm{Tan}(5^o)}{1 + \mathrm{Tan}(35^o)\,\mathrm{Tan}(5^o)} = \left(\mathrm{Tan}(30^o) = \frac{\sqrt{3}}{3}\right)\right) \\ .9 = (\mathrm{Sin}(78^o)\,\mathrm{Cos}(12^o) + \mathrm{Cos}(78^o)\,\mathrm{Sin}(12^o) = (\mathrm{Sin}(90^o) = 1)) & .10 = \left(2\,\mathrm{Sin}(15^o)\,\mathrm{Cos}(15^o) = \left(\mathrm{Sin}(30^o) = \frac{1}{2}\right)\right) \end{bmatrix}, \begin{bmatrix} :) \\ :(\\ :) \\ :(\\ \begin{bmatrix}\begin{bmatrix} M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \end{bmatrix}\end{bmatrix} \\ :) \\ :(\\ :) \\ :(\\ :) \\ :(\end{bmatrix}$$

$$Ans3 = \begin{bmatrix} .1 = \left(\mathrm{Sin}(\alpha) = \frac{\sqrt{3}}{2}\right) & .2 = \left(\mathrm{Cos}(\beta) = -\frac{2\sqrt{2}}{3}\right) \\ .3 = \left(\mathrm{Tan}(\beta) = -\frac{\sqrt{2}}{4}\right) & .4 = \left(\mathrm{Sin}(\beta - \alpha) = \frac{1}{6} + \frac{\sqrt{2}\sqrt{3}}{3}\right) \\ .5 = \left(\mathrm{Cos}(\alpha - \beta) = \frac{\sqrt{3}}{6} - \frac{\sqrt{2}}{3}\right) & .6 = \left(\mathrm{Tan}(\alpha + \beta) = -\frac{8\sqrt{2}}{5} + \frac{9\sqrt{3}}{5}\right) \\ .7 = \left(\mathrm{Cos}(2\beta) = \frac{7}{9}\right) & .8 = (\mathrm{Tan}(2\alpha) = -\sqrt{3}) \end{bmatrix}, \quad Ans4 = \begin{bmatrix} .1 = \left(\mathrm{Cos}(\alpha) = -\frac{3\sqrt{5}}{7}\right) & .2 = \left(\mathrm{Sin}(\beta) = -\frac{\sqrt{15}}{4}\right) \\ .3 = (\mathrm{Tan}(\beta) = -\sqrt{15}) & .4 = \left(\mathrm{Sin}(\alpha + \beta) = -\frac{1}{14} + \frac{3\sqrt{5}\sqrt{15}}{28}\right) \\ .5 = \left(\mathrm{Cos}(\beta - \alpha) = -\frac{3\sqrt{5}}{28} + \frac{\sqrt{15}}{14}\right) & .6 = \left(\mathrm{Tan}(\alpha - \beta) = -\frac{32\sqrt{5}}{5} - \frac{49\sqrt{5}\sqrt{3}}{15}\right) \\ .7 = \left(\mathrm{Cos}(2\beta) = \frac{-7}{8}\right) & .8 = \left(\mathrm{Tan}(2\alpha) = \frac{12\sqrt{5}}{41}\right) \end{bmatrix}, \begin{bmatrix} :) \\ :(\\ M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \\ :) \\ :(\end{bmatrix}$$

$$Ans5 = (\mathrm{Cos}(10^o) = (\mathrm{Sqrt}(0.9700) = 0.985)), \quad , \begin{bmatrix} M \\ U \\ T \end{bmatrix}$$

$$Ans6 = (\mathrm{Sin}(43^o) = (\mathrm{Sqrt}(0.4650) = 0.682)), \quad , \begin{bmatrix} M \\ U \\ T \end{bmatrix}$$

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$$Ans1 = \begin{bmatrix} .1 = \left(\mathrm{Sin}(15^o) = \frac{\sqrt{2}\sqrt{3}}{4} - \frac{\sqrt{2}}{4}\right) & .2 = \left(\mathrm{Cos}\left(\frac{7\pi}{12}\right) = \frac{\sqrt{2}}{4} - \frac{\sqrt{2}\sqrt{3}}{4}\right) \\ .3 = (\mathrm{Tan}(75^o) = 2 + \sqrt{3}) & .4 = \left(\mathrm{Sec}\left(-\frac{19\pi}{12}\right) = \sqrt{2}\sqrt{3} + \sqrt{2}\right) \\ .5 = (\mathrm{Cot}((-15)^o) = -2 - \sqrt{3}) & .6 = \left(\mathrm{Cos}(195^o) = -\frac{\sqrt{2}}{4} - \frac{\sqrt{2}\sqrt{3}}{4}\right) \\ .7 = \left(\mathrm{Csc}\left(\frac{19\pi}{12}\right) = -\sqrt{2}\sqrt{3} + \sqrt{2}\right) & .8 = \left(\mathrm{Tan}\left(-\frac{13\pi}{12}\right) = -2 + \sqrt{3}\right) \end{bmatrix}, \begin{bmatrix} :) \\ :(\\ M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \\ :) \\ :(\end{bmatrix}$$

$$Ans2 = \begin{bmatrix} .1 = \left(\frac{\mathrm{Tan}\left(\frac{\pi}{18}\right) + \mathrm{Tan}\left(\frac{\pi}{9}\right)}{1 - \mathrm{Tan}\left(\frac{\pi}{18}\right)\mathrm{Tan}\left(\frac{\pi}{9}\right)} = \left(\mathrm{Tan}\left(\frac{\pi}{6}\right) = \frac{\sqrt{3}}{3}\right)\right) & .2 = \left(\mathrm{Cos}\left(\frac{11\pi}{36}\right)\mathrm{Cos}\left(\frac{\pi}{18}\right) + \mathrm{Sin}\left(\frac{11\pi}{36}\right)\mathrm{Sin}\left(\frac{\pi}{18}\right) = \left(\mathrm{Cos}\left(\frac{\pi}{4}\right) = \frac{\sqrt{2}}{2}\right)\right) \\ .3 = \left(\mathrm{Cos}(22.5^o)^2 - \mathrm{Sin}(22.5^o)^2 = \left(\mathrm{Cos}(45^o) = \frac{\sqrt{2}}{2}\right)\right) & .4 = \left(\frac{\mathrm{Tan}(50^o) - \mathrm{Tan}(20^o)}{1 + \mathrm{Tan}(50^o)\mathrm{Tan}(20^o)} = \left(\mathrm{Tan}(30^o) = \frac{\sqrt{3}}{3}\right)\right) \\ .5 = \left(1 - 2\,\mathrm{Sin}\left(\frac{\pi}{12}\right)^2 = \left(\mathrm{Cos}\left(\frac{\pi}{6}\right) = \frac{\sqrt{3}}{2}\right)\right) & .6 = \left(2\,\mathrm{Cos}\left(\frac{\pi}{8}\right)^2 - 1 = \left(\mathrm{Cos}\left(\frac{\pi}{4}\right) = \frac{\sqrt{2}}{2}\right)\right) \\ .7 = \left(\mathrm{Sin}(72^o)\mathrm{Cos}(12^o) - \mathrm{Cos}(72^o)\mathrm{Sin}(12^o) = \left(\mathrm{Sin}(60^o) = \frac{\sqrt{3}}{2}\right)\right) & .8 = \left(\frac{2\,\mathrm{Tan}\left(\frac{\pi}{12}\right)}{1 - \mathrm{Tan}\left(\frac{\pi}{12}\right)^2} = \left(\mathrm{Tan}\left(\frac{\pi}{6}\right) = \mathrm{Tan}\left(\frac{\pi}{6}\right)\right)\right) \\ .9 = \left(\mathrm{Sin}(30^o)\mathrm{Cos}(15^o) + \mathrm{Cos}(30^o)\mathrm{Sin}(15^o) = \left(\mathrm{Sin}(45^o) = \frac{\sqrt{2}}{2}\right)\right) & .10 = \left(2\,\mathrm{Sin}(15^o)\mathrm{Cos}(15^o) = \left(\mathrm{Sin}(30^o) = \frac{1}{2}\right)\right) \end{bmatrix}, \begin{bmatrix} :) \\ :(\\ :) \\ :(\\ \left[\left[\begin{matrix} M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \end{matrix}\right]\right] \\ :) \\ :(\\ :) \\ :(\\ :) \\ :(\end{bmatrix}$$

$$Ans3 = \begin{bmatrix} .1 = \left(\mathrm{Sin}(\alpha) = \frac{\sqrt{15}}{4}\right) & .2 = \left(\mathrm{Cos}(\beta) = \frac{-4}{5}\right) \\ .3 = (\mathrm{Tan}(\alpha) = \sqrt{15}) & .4 = \left(\mathrm{Sin}(\alpha+\beta) = -\frac{\sqrt{15}}{5} + \frac{3}{20}\right) \\ .5 = \left(\mathrm{Cos}(\alpha-\beta) = \frac{3\sqrt{15}}{20} - \frac{1}{5}\right) & .6 = \left(\mathrm{Tan}(\beta-\alpha) = \frac{192}{119} + \frac{25\sqrt{15}}{119}\right) \\ .7 = \left(\mathrm{Cos}(2\beta) = \frac{7}{25}\right) & .8 = \left(\mathrm{Tan}(2\alpha) = -\frac{\sqrt{15}}{7}\right) \end{bmatrix}, \; Ans4 = \begin{bmatrix} .1 = \left(\mathrm{Cos}(\alpha) = -\frac{\sqrt{35}}{6}\right) & .2 = \left(\mathrm{Sin}(\beta) = -\frac{\sqrt{39}}{8}\right) \\ .3 = \left(\mathrm{Tan}(\beta) = -\frac{\sqrt{39}}{5}\right) & .4 = \left(\mathrm{Sin}(\beta-\alpha) = \frac{\sqrt{35}\sqrt{39}}{48} + \frac{5}{48}\right) \\ .5 = \left(\mathrm{Cos}(\alpha+\beta) = -\frac{5\sqrt{35}}{48} - \frac{\sqrt{39}}{48}\right) & .6 = \left(\mathrm{Tan}(\alpha-\beta) = \frac{16\sqrt{35}}{209} + \frac{45\sqrt{39}}{209}\right) \\ .7 = \left(\mathrm{Cos}(2\alpha) = \frac{17}{18}\right) & .8 = \left(\mathrm{Tan}(2\beta) = \frac{5\sqrt{39}}{7}\right) \end{bmatrix}, \begin{bmatrix} :) \\ :(\\ M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \\ :) \\ :(\end{bmatrix}$$

$$Ans5 = (\mathrm{Cos}(17^o) = (\mathrm{Sqrt}(0.9145) = 0.956)), \quad \begin{bmatrix} M \\ U \\ T \end{bmatrix}$$

$$Ans6 = (\mathrm{Sin}(40^o) = (\mathrm{Sqrt}(0.4130) = 0.643)), \quad \begin{bmatrix} M \\ U \\ T \end{bmatrix}$$

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TrigonometryExercise4 Answers for No.10278

$$Ans1=\begin{bmatrix} .1=\left(\mathrm{Cos}(105^{o})=\frac{\sqrt{2}}{4}-\frac{\sqrt{2}\sqrt{3}}{4}\right) & .2=\left(\mathrm{Sin}\left(\frac{\pi}{12}\right)=\frac{\sqrt{2}\sqrt{3}}{4}-\frac{\sqrt{2}}{4}\right)\\ .3=\left(\mathrm{Tan}\left(\frac{5\pi}{12}\right)=2+\sqrt{3}\right) & .4=\left(\mathrm{Cot}\left(\frac{11\pi}{12}\right)=-2-\sqrt{3}\right)\\ .5=\left(\mathrm{Sin}((-165)^{o})=\frac{\sqrt{2}}{4}-\frac{\sqrt{2}\sqrt{3}}{4}\right) & .6=\left(\mathrm{Csc}\left(-\frac{\pi}{12}\right)=-\sqrt{2}\sqrt{3}-\sqrt{2}\right)\\ .7=(\mathrm{Sec}(255^{o})=-\sqrt{2}\sqrt{3}-\sqrt{2}) & .8=\left(\mathrm{Cos}\left(-\frac{23\pi}{12}\right)=\frac{\sqrt{2}}{4}+\frac{\sqrt{2}\sqrt{3}}{4}\right)\end{bmatrix},\ \begin{bmatrix}:)\\:(\\M\\a\\t\\h\\@\\M\\U\\T\\:)\\:(\end{bmatrix}$$

$$Ans2=\begin{bmatrix} .1=\left(2\,\mathrm{Cos}\left(\frac{\pi}{12}\right)^{2}-1=\left(\mathrm{Cos}\left(\frac{\pi}{6}\right)=\frac{\sqrt{3}}{2}\right)\right) & .2=\left(\mathrm{Cos}\left(\frac{\pi}{8}\right)^{2}-\mathrm{Sin}\left(\frac{\pi}{8}\right)^{2}=\left(\mathrm{Cos}\left(\frac{\pi}{4}\right)=\frac{\sqrt{2}}{2}\right)\right)\\ .3=\left(\frac{2\,\mathrm{Tan}\left(\frac{\pi}{8}\right)}{1-\mathrm{Tan}\left(\frac{\pi}{8}\right)^{2}}=\left(\mathrm{Tan}\left(\frac{\pi}{4}\right)=\mathrm{Tan}\left(\frac{\pi}{4}\right)\right)\right) & .4=\left(\frac{\mathrm{Tan}\left(\frac{7\pi}{18}\right)-\mathrm{Tan}\left(\frac{\pi}{18}\right)}{1+\mathrm{Tan}\left(\frac{7\pi}{18}\right)\mathrm{Tan}\left(\frac{\pi}{18}\right)}=\left(\mathrm{Tan}\left(\frac{\pi}{3}\right)=\sqrt{3}\right)\right)\\ .5=\left(\mathrm{Sin}\left(\frac{\pi}{15}\right)\mathrm{Cos}\left(\frac{\pi}{10}\right)+\mathrm{Cos}\left(\frac{\pi}{15}\right)\mathrm{Sin}\left(\frac{\pi}{10}\right)=\left(\mathrm{Sin}\left(\frac{\pi}{6}\right)=\frac{1}{2}\right)\right) & .6=\left(\mathrm{Cos}(40^{o})\mathrm{Cos}(10^{o})+\mathrm{Sin}(40^{o})\mathrm{Sin}(10^{o})=\left(\mathrm{Cos}(30^{o})=\frac{\sqrt{3}}{2}\right)\right)\\ .7=\left(\mathrm{Cos}(35^{o})\mathrm{Cos}(10^{o})-\mathrm{Sin}(35^{o})\mathrm{Sin}(10^{o})=\left(\mathrm{Cos}(45^{o})=\frac{\sqrt{2}}{2}\right)\right) & .8=\left(\frac{\mathrm{Tan}\left(\frac{5\pi}{18}\right)+\mathrm{Tan}\left(\frac{\pi}{18}\right)}{1-\mathrm{Tan}\left(\frac{5\pi}{18}\right)\mathrm{Tan}\left(\frac{\pi}{18}\right)}=\left(\mathrm{Tan}\left(\frac{\pi}{3}\right)=\sqrt{3}\right)\right)\\ .9=\left(1-2\,\mathrm{Sin}(15^{o})^{2}=\left(\mathrm{Cos}(30^{o})=\frac{\sqrt{3}}{2}\right)\right) & .10=\left(2\,\mathrm{Sin}(22.5^{o})\mathrm{Cos}(22.5^{o})=\left(\mathrm{Sin}(45^{o})=\frac{\sqrt{2}}{2}\right)\right)\end{bmatrix},\ \begin{bmatrix}:)\\:(\\:)\\:(\\\left[\left[\begin{matrix}M\\a\\t\\h\\@\\M\\U\\T\end{matrix}\right]\right]\\:)\\:(\\:)\\:(\\:)\\:(\end{bmatrix}$$

$$Ans3=\begin{bmatrix} .1=\left(\mathrm{Cos}(\alpha)=\frac{\sqrt{55}}{8}\right) & .2=\left(\mathrm{Sin}(\beta)=-\frac{\sqrt{35}}{6}\right)\\ .3=(\mathrm{Tan}(\beta)=-\sqrt{35}) & .4=\left(\mathrm{Sin}(\alpha+\beta)=\frac{1}{16}-\frac{\sqrt{55}\sqrt{35}}{48}\right)\\ .5=\left(\mathrm{Cos}(\beta-\alpha)=\frac{\sqrt{55}}{48}-\frac{\sqrt{35}}{16}\right) & .6=\left(\mathrm{Tan}(\alpha-\beta)=-\frac{27\sqrt{5}\sqrt{11}}{65}-\frac{16\sqrt{5}\sqrt{7}}{65}\right)\\ .7=\left(\mathrm{Sin}(2\alpha)=\frac{3\sqrt{55}}{32}\right) & .8=\left(\mathrm{Tan}(2\beta)=\frac{\sqrt{35}}{17}\right)\end{bmatrix},\ Ans4=\begin{bmatrix} .1=\left(\mathrm{Cos}(\alpha)=-\frac{\sqrt{55}}{8}\right) & .2=\left(\mathrm{Sin}(\beta)=\frac{-4}{5}\right)\\ .3=\left(\mathrm{Tan}(\beta)=\frac{4}{3}\right) & .4=\left(\mathrm{Sin}(\alpha-\beta)=-\frac{9}{40}-\frac{\sqrt{55}}{10}\right)\\ .5=\left(\mathrm{Cos}(\beta-\alpha)=\frac{3\sqrt{55}}{40}-\frac{3}{10}\right) & .6=\left(\mathrm{Tan}(\alpha+\beta)=-\frac{25\sqrt{55}}{117}+\frac{256}{117}\right)\\ .7=\left(\mathrm{Sin}(2\alpha)=-\frac{3\sqrt{55}}{32}\right) & .8=\left(\mathrm{Tan}(2\beta)=\frac{-24}{7}\right)\end{bmatrix},\ \begin{bmatrix}:)\\:(\\M\\a\\t\\h\\@\\M\\U\\T\\:)\\:(\end{bmatrix}$$

$$Ans5=(\mathrm{Sin}(42^{o})=(\mathrm{Sqrt}(0.4475)=0.669)),\ \begin{bmatrix}M\\U\\T\end{bmatrix}$$

$$Ans6=(\mathrm{Cos}(32^{o})=(\mathrm{Sqrt}(0.7190)=0.848)),\ \begin{bmatrix}M\\U\\T\end{bmatrix}$$

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$$Ans1 = \begin{bmatrix} .1 = \left(\text{Sin}(15^o) = \frac{\sqrt{2}\sqrt{3}}{4} - \frac{\sqrt{2}}{4}\right) & .2 = \left(\text{Cos}\left(\frac{5\pi}{12}\right) = \frac{\sqrt{2}\sqrt{3}}{4} - \frac{\sqrt{2}}{4}\right) \\ .3 = \left(\text{Tan}\left(\frac{7\pi}{12}\right) = -2 - \sqrt{3}\right) & .4 = \left(\text{Sin}((-15)^o) = \frac{\sqrt{2}}{4} - \frac{\sqrt{2}\sqrt{3}}{4}\right) \\ .5 = \left(\text{Sec}\left(-\frac{23\pi}{12}\right) = \sqrt{2}\sqrt{3} - \sqrt{2}\right) & .6 = \left(\text{Csc}\left(\frac{19\pi}{12}\right) = -\sqrt{2}\sqrt{3} + \sqrt{2}\right) \\ .7 = \left(\text{Cos}((-105)^o) = \frac{\sqrt{2}}{4} - \frac{\sqrt{2}\sqrt{3}}{4}\right) & .8 = \left(\text{Cot}((-285)^o) = 2 - \sqrt{3}\right) \end{bmatrix}, \; , \begin{bmatrix} :) \\ :(\\ M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \\ :) \\ :(\end{bmatrix}$$

$$Ans2 = \begin{bmatrix} .1 = \left(\text{Cos}\left(\frac{\pi}{8}\right)^2 - \text{Sin}\left(\frac{\pi}{8}\right)^2 = \left(\text{Cos}\left(\frac{\pi}{4}\right) = \frac{\sqrt{2}}{2}\right)\right) & .2 = \left(\frac{\text{Tan}(35^o) + \text{Tan}(10^o)}{1 - \text{Tan}(35^o)\,\text{Tan}(10^o)} = (\text{Tan}(45^o) = 1)\right) \\ .3 = \left(\text{Sin}\left(\frac{5\pi}{18}\right)\text{Cos}\left(\frac{\pi}{9}\right) - \text{Cos}\left(\frac{5\pi}{18}\right)\text{Sin}\left(\frac{\pi}{9}\right) = \left(\text{Sin}\left(\frac{\pi}{6}\right) = \frac{1}{2}\right)\right) & .4 = \left(2\,\text{Sin}(22.5^o)\,\text{Cos}(22.5^o) = \left(\text{Sin}(45^o) = \frac{\sqrt{2}}{2}\right)\right) \\ .5 = \left(\frac{2\,\text{Tan}\left(\frac{\pi}{8}\right)}{1 - \text{Tan}\left(\frac{\pi}{8}\right)^2} = \left(\text{Tan}\left(\frac{\pi}{4}\right) = \text{Tan}\left(\frac{\pi}{4}\right)\right)\right) & .6 = (\text{Cos}(10^o)\,\text{Cos}(80^o) - \text{Sin}(10^o)\,\text{Sin}(80^o) = (\text{Cos}(90^o) = 0)) \\ .7 = \left(1 - 2\,\text{Sin}\left(\frac{\pi}{12}\right)^2 = \left(\text{Cos}\left(\frac{\pi}{6}\right) = \frac{\sqrt{3}}{2}\right)\right) & .8 = \left(2\,\text{Cos}(15^o)^2 - 1 = \left(\text{Cos}(30^o) = \frac{\sqrt{3}}{2}\right)\right) \\ .9 = \left(\text{Cos}\left(\frac{7\pi}{18}\right)\text{Cos}\left(\frac{\pi}{18}\right) + \text{Sin}\left(\frac{7\pi}{18}\right)\text{Sin}\left(\frac{\pi}{18}\right) = \left(\text{Cos}\left(\frac{\pi}{3}\right) = \frac{1}{2}\right)\right) & .10 = \left(\text{Sin}\left(\frac{\pi}{9}\right)\text{Cos}\left(\frac{2\pi}{9}\right) + \text{Cos}\left(\frac{\pi}{9}\right)\text{Sin}\left(\frac{2\pi}{9}\right) = \left(\text{Sin}\left(\frac{\pi}{3}\right) = \frac{\sqrt{3}}{2}\right)\right) \end{bmatrix}, \; , \begin{bmatrix} :) \\ :(\\ :) \\ :(\\ \begin{bmatrix}\begin{bmatrix} M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \end{bmatrix}\end{bmatrix} \\ :) \\ :(\\ :) \\ :(\\ :) \\ :(\end{bmatrix}$$

$$Ans3 = \begin{bmatrix} .1 = \left(\text{Cos}(\alpha) = \frac{\sqrt{33}}{7}\right) & .2 = \left(\text{Sin}(\beta) = \frac{\sqrt{21}}{5}\right) \\ .3 = \left(\text{Tan}(\alpha) = \frac{4\sqrt{33}}{33}\right) & .4 = \left(\text{Sin}(\beta - \alpha) = \frac{\sqrt{33}\sqrt{21}}{35} + \frac{8}{35}\right) \\ .5 = \left(\text{Cos}(\alpha - \beta) = -\frac{2\sqrt{33}}{35} + \frac{4\sqrt{21}}{35}\right) & .6 = \left(\text{Tan}(\alpha + \beta) = -\frac{25\sqrt{3}\sqrt{11}}{51} + \frac{49\sqrt{3}\sqrt{7}}{102}\right) \\ .7 = \left(\text{Sin}(2\alpha) = \frac{8\sqrt{33}}{49}\right) & .8 = \left(\text{Tan}(2\beta) = \frac{4\sqrt{21}}{17}\right) \end{bmatrix}, \; , \; Ans4 = \begin{bmatrix} .1 = \left(\text{Cos}(\alpha) = \frac{2\sqrt{2}}{3}\right) & .2 = \left(\text{Sin}(\beta) = -\frac{\sqrt{5}}{3}\right) \\ .3 = \left(\text{Tan}(\beta) = \frac{\sqrt{5}}{2}\right) & .4 = \left(\text{Sin}(\alpha + \beta) = \frac{2}{9} - \frac{2\sqrt{5}\sqrt{2}}{9}\right) \\ .5 = \left(\text{Cos}(\alpha - \beta) = -\frac{4\sqrt{2}}{9} + \frac{\sqrt{5}}{9}\right) & .6 = \left(\text{Tan}(\beta - \alpha) = \frac{2\sqrt{5}}{3} + \frac{2\sqrt{2}}{3}\right) \\ .7 = \left(\text{Cos}(2\alpha) = \frac{7}{9}\right) & .8 = (\text{Tan}(2\beta) = -4\sqrt{5}) \end{bmatrix}, \; , \begin{bmatrix} :) \\ :(\\ M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \\ :) \\ :(\end{bmatrix}$$

$$Ans5 = (\text{Sin}(25^o) = (\text{Sqrt}(0.1785) = 0.423)), \; , \begin{bmatrix} M \\ U \\ T \end{bmatrix}$$

$$Ans6 = (\text{Cos}(14^o) = (\text{Sqrt}(0.9415) = 0.970)), \; , \begin{bmatrix} M \\ U \\ T \end{bmatrix}$$

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$$Ans1 = \begin{bmatrix} .1 = \left(\mathrm{Sin}(75^o) = \frac{\sqrt{2}}{4} + \frac{\sqrt{2}\sqrt{3}}{4}\right) & .2 = \left(\mathrm{Cos}\left(\frac{7\pi}{12}\right) = \frac{\sqrt{2}}{4} - \frac{\sqrt{2}\sqrt{3}}{4}\right) \\ .3 = (\mathrm{Tan}(15^o) = 2 - \sqrt{3}) & .4 = \left(\mathrm{Sec}\left(-\frac{19\pi}{12}\right) = \sqrt{2}\sqrt{3} + \sqrt{2}\right) \\ .5 = \left(\mathrm{Cos}((\text{-}255)^o) = \frac{\sqrt{2}}{4} - \frac{\sqrt{2}\sqrt{3}}{4}\right) & .6 = \left(\mathrm{Cot}\left(\frac{19\pi}{12}\right) = -2 + \sqrt{3}\right) \\ .7 = \left(\mathrm{Sin}((\text{-}105)^o) = -\frac{\sqrt{2}}{4} - \frac{\sqrt{2}\sqrt{3}}{4}\right) & .8 = \left(\mathrm{Csc}\left(\frac{23\pi}{12}\right) = -\sqrt{2}\sqrt{3} - \sqrt{2}\right) \end{bmatrix}, \begin{bmatrix} :) \\ :(\\ M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \\ :) \\ :(\end{bmatrix}$$

$$Ans2 = \begin{bmatrix} .1 = \left(2\,\mathrm{Cos}\left(\frac{\pi}{12}\right)^2 - 1 = \left(\mathrm{Cos}\left(\frac{\pi}{6}\right) = \frac{\sqrt{3}}{2}\right)\right) & .2 = \left(2\,\mathrm{Sin}(22.5^o)\,\mathrm{Cos}(22.5^o) = \left(\mathrm{Sin}(45^o) = \frac{\sqrt{2}}{2}\right)\right) \\ .3 = \left(\frac{\mathrm{Tan}(55^o) - \mathrm{Tan}(10^o)}{1 + \mathrm{Tan}(55^o)\,\mathrm{Tan}(10^o)} = (\mathrm{Tan}(45^o) = 1)\right) & .4 = \left(\mathrm{Cos}\left(\frac{17\pi}{36}\right)\mathrm{Cos}\left(\frac{5\pi}{36}\right) + \mathrm{Sin}\left(\frac{17\pi}{36}\right)\mathrm{Sin}\left(\frac{5\pi}{36}\right) = \left(\mathrm{Cos}\left(\frac{\pi}{3}\right) = \frac{1}{2}\right)\right) \\ .5 = \left(\frac{\mathrm{Tan}(12^o) + \mathrm{Tan}(48^o)}{1 - \mathrm{Tan}(12^o)\,\mathrm{Tan}(48^o)} = (\mathrm{Tan}(60^o) = \sqrt{3})\right) & .6 = \left(\frac{2\,\mathrm{Tan}\left(\frac{\pi}{12}\right)}{1 - \mathrm{Tan}\left(\frac{\pi}{12}\right)^2} = \left(\mathrm{Tan}\left(\frac{\pi}{6}\right) = \mathrm{Tan}\left(\frac{\pi}{6}\right)\right)\right) \\ .7 = \left(\mathrm{Sin}\left(\frac{5\pi}{18}\right)\mathrm{Cos}\left(\frac{\pi}{9}\right) - \mathrm{Cos}\left(\frac{5\pi}{18}\right)\mathrm{Sin}\left(\frac{\pi}{9}\right) = \left(\mathrm{Sin}\left(\frac{\pi}{6}\right) = \frac{1}{2}\right)\right) & .8 = \left(\mathrm{Cos}(20^o)\,\mathrm{Cos}(25^o) - \mathrm{Sin}(20^o)\,\mathrm{Sin}(25^o) = \left(\mathrm{Cos}(45^o) = \frac{\sqrt{2}}{2}\right)\right) \\ .9 = \left(\mathrm{Cos}(15^o)^2 - \mathrm{Sin}(15^o)^2 = \left(\mathrm{Cos}(30^o) = \frac{\sqrt{3}}{2}\right)\right) & .10 = \left(1 - 2\,\mathrm{Sin}\left(\frac{\pi}{8}\right)^2 = \left(\mathrm{Cos}\left(\frac{\pi}{4}\right) = \frac{\sqrt{2}}{2}\right)\right) \end{bmatrix}, \begin{bmatrix} :) \\ :(\\ :) \\ :(\\ \begin{bmatrix}\begin{bmatrix} M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \end{bmatrix}\end{bmatrix} \\ :) \\ :(\\ :) \\ :(\\ :) \\ :(\end{bmatrix}$$

$$Ans3 = \begin{bmatrix} .1 = \left(\mathrm{Sin}(\alpha) = \frac{2\sqrt{2}}{3}\right) & .2 = \left(\mathrm{Cos}(\beta) = -\frac{\sqrt{35}}{6}\right) \\ .3 = (\mathrm{Tan}(\alpha) = 2\sqrt{2}) & .4 = \left(\mathrm{Sin}(\beta - \alpha) = \frac{1}{18} + \frac{\sqrt{2}\sqrt{35}}{9}\right) \\ .5 = \left(\mathrm{Cos}(\alpha + \beta) = -\frac{\sqrt{35}}{18} - \frac{\sqrt{2}}{9}\right) & .6 = \left(\mathrm{Tan}(\alpha - \beta) = \frac{8\sqrt{2}}{3} + \frac{\sqrt{35}}{3}\right) \\ .7 = \left(\mathrm{Sin}(2\beta) = -\frac{\sqrt{35}}{18}\right) & .8 = \left(\mathrm{Tan}(2\alpha) = -\frac{4\sqrt{2}}{7}\right) \end{bmatrix}, \quad Ans4 = \begin{bmatrix} .1 = \left(\mathrm{Sin}(\alpha) = -\frac{\sqrt{39}}{8}\right) & .2 = \left(\mathrm{Cos}(\beta) = \frac{\sqrt{3}}{2}\right) \\ .3 = \left(\mathrm{Tan}(\beta) = -\frac{\sqrt{3}}{3}\right) & .4 = \left(\mathrm{Sin}(\alpha - \beta) = -\frac{\sqrt{3}\sqrt{39}}{16} - \frac{5}{16}\right) \\ .5 = \left(\mathrm{Cos}(\beta - \alpha) = -\frac{5\sqrt{3}}{16} + \frac{\sqrt{39}}{16}\right) & .6 = \left(\mathrm{Tan}(\alpha + \beta) = \frac{5\sqrt{3}\sqrt{13}}{9} - \frac{16\sqrt{3}}{9}\right) \\ .7 = \left(\mathrm{Sin}(2\beta) = -\frac{\sqrt{3}}{2}\right) & .8 = \left(\mathrm{Tan}(2\alpha) = -\frac{5\sqrt{39}}{7}\right) \end{bmatrix}, \begin{bmatrix} :) \\ :(\\ M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \\ :) \\ :(\end{bmatrix}$$

$$Ans5 = (\mathrm{Cos}(28^o) = (\mathrm{Sqrt}(0.7795) = 0.883)), \begin{bmatrix} M \\ U \\ T \end{bmatrix}$$

$$Ans6 = (\mathrm{Sin}(39^o) = (\mathrm{Sqrt}(0.3960) = 0.629)), \begin{bmatrix} M \\ U \\ T \end{bmatrix}$$

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$$Ans1 = \begin{bmatrix} .1 = \left(\mathrm{Cos}(105^{o}) = \frac{\sqrt{2}}{4} - \frac{\sqrt{2}\sqrt{3}}{4}\right) & .2 = \left(\mathrm{Sin}\left(\frac{\pi}{12}\right) = \frac{\sqrt{2}\sqrt{3}}{4} - \frac{\sqrt{2}}{4}\right) \\ .3 = \left(\mathrm{Tan}\left(\frac{5\pi}{12}\right) = 2 + \sqrt{3}\right) & .4 = \left(\mathrm{Tan}\left(-\frac{23\pi}{12}\right) = 2 - \sqrt{3}\right) \\ .5 = \left(\mathrm{Sin}((-75)^{o}) = -\frac{\sqrt{2}}{4} - \frac{\sqrt{2}\sqrt{3}}{4}\right) & .6 = \left(\mathrm{Cot}\left(-\frac{13\pi}{12}\right) = -2 - \sqrt{3}\right) \\ .7 = \left(\mathrm{Cos}(255^{o}) = \frac{\sqrt{2}}{4} - \frac{\sqrt{2}\sqrt{3}}{4}\right) & .8 = \left(\mathrm{Csc}((-285)^{o}) = \sqrt{2}\sqrt{3} - \sqrt{2}\right) \end{bmatrix}, \begin{bmatrix} :) \\ :(\\ M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \\ :) \\ :(\end{bmatrix}$$

$$Ans2 = \begin{bmatrix} .1 = \left(\frac{\mathrm{Tan}\left(\frac{\pi}{3}\right) - \mathrm{Tan}\left(\frac{\pi}{12}\right)}{1 + \mathrm{Tan}\left(\frac{\pi}{3}\right)\mathrm{Tan}\left(\frac{\pi}{12}\right)} = \left(\mathrm{Tan}\left(\frac{\pi}{4}\right) = 1\right)\right) & .2 = \left(\mathrm{Sin}\left(\frac{17\pi}{30}\right)\mathrm{Cos}\left(\frac{\pi}{15}\right) - \mathrm{Cos}\left(\frac{17\pi}{30}\right)\mathrm{Sin}\left(\frac{\pi}{15}\right) = \left(\mathrm{Sin}\left(\frac{\pi}{2}\right) = 1\right)\right) \\ .3 = \left(\mathrm{Cos}\left(\frac{7\pi}{36}\right)\mathrm{Cos}\left(\frac{5\pi}{36}\right) - \mathrm{Sin}\left(\frac{7\pi}{36}\right)\mathrm{Sin}\left(\frac{5\pi}{36}\right) = \left(\mathrm{Cos}\left(\frac{\pi}{3}\right) = \frac{1}{2}\right)\right) & .4 = \left(1 - 2\,\mathrm{Sin}\left(\frac{\pi}{12}\right)^{2} = \left(\mathrm{Cos}\left(\frac{\pi}{6}\right) = \frac{\sqrt{3}}{2}\right)\right) \\ .5 = \left(\mathrm{Cos}\left(\frac{\pi}{8}\right)^{2} - \mathrm{Sin}\left(\frac{\pi}{8}\right)^{2} = \left(\mathrm{Cos}\left(\frac{\pi}{4}\right) = \frac{\sqrt{2}}{2}\right)\right) & .6 = \left(\mathrm{Cos}(42^{o})\,\mathrm{Cos}(12^{o}) + \mathrm{Sin}(42^{o})\,\mathrm{Sin}(12^{o}) = \left(\mathrm{Cos}(30^{o}) = \frac{\sqrt{3}}{2}\right)\right) \\ .7 = \left(2\,\mathrm{Cos}(22.5^{o})^{2} - 1 = \left(\mathrm{Cos}(45^{o}) = \frac{\sqrt{2}}{2}\right)\right) & .8 = \left(\frac{2\,\mathrm{Tan}(22.5^{o})}{1 - \mathrm{Tan}(22.5^{o})^{2}} = (\mathrm{Tan}(45^{o}) = 1)\right) \\ .9 = \left(2\,\mathrm{Sin}(15^{o})\,\mathrm{Cos}(15^{o}) = \left(\mathrm{Sin}(30^{o}) = \frac{1}{2}\right)\right) & .10 = \left(\mathrm{Sin}(25^{o})\,\mathrm{Cos}(20^{o}) + \mathrm{Cos}(25^{o})\,\mathrm{Sin}(20^{o}) = \left(\mathrm{Sin}(45^{o}) = \frac{\sqrt{2}}{2}\right)\right) \end{bmatrix}, \begin{bmatrix} :) \\ :(\\ :) \\ :(\\ \left[\left[\begin{matrix} M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \end{matrix}\right]\right] \\ :) \\ :(\\ :) \\ :(\\ :) \\ :(\end{bmatrix}$$

$$Ans3 = \begin{bmatrix} .1 = \left(\mathrm{Cos}(\alpha) = \frac{2\sqrt{2}}{3}\right) & .2 = \left(\mathrm{Sin}(\beta) = \frac{2\sqrt{6}}{7}\right) \\ .3 = \left(\mathrm{Tan}(\alpha) = \frac{\sqrt{2}}{4}\right) & .4 = \left(\mathrm{Sin}(\alpha - \beta) = -\frac{5}{21} - \frac{4\sqrt{6}\sqrt{2}}{21}\right) \\ .5 = \left(\mathrm{Cos}(\beta - \alpha) = -\frac{10\sqrt{2}}{21} + \frac{2\sqrt{6}}{21}\right) & .6 = \left(\mathrm{Tan}(\alpha + \beta) = \frac{49\sqrt{2}}{88} - \frac{45\sqrt{2}\sqrt{3}}{88}\right) \\ .7 = \left(\mathrm{Cos}(2\beta) = \frac{1}{49}\right) & .8 = \left(\mathrm{Tan}(2\alpha) = \frac{4\sqrt{2}}{7}\right) \end{bmatrix}, \quad Ans4 = \begin{bmatrix} .1 = \left(\mathrm{Sin}(\alpha) = -\frac{2\sqrt{6}}{7}\right) & .2 = \left(\mathrm{Cos}(\beta) = -\frac{\sqrt{3}}{2}\right) \\ .3 = \left(\mathrm{Tan}(\beta) = \frac{\sqrt{3}}{3}\right) & .4 = \left(\mathrm{Sin}(\beta - \alpha) = -\frac{5}{14} - \frac{\sqrt{6}\sqrt{3}}{7}\right) \\ .5 = \left(\mathrm{Cos}(\alpha + \beta) = -\frac{5\sqrt{3}}{14} - \frac{\sqrt{6}}{7}\right) & .6 = \left(\mathrm{Tan}(\alpha - \beta) = -\frac{40\sqrt{2}\sqrt{3}}{51} - \frac{49\sqrt{3}}{51}\right) \\ .7 = \left(\mathrm{Cos}(2\beta) = \frac{1}{2}\right) & .8 = (\mathrm{Tan}(2\alpha) = -20\sqrt{6}) \end{bmatrix}, \begin{bmatrix} :) \\ :(\\ M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \\ :) \\ :(\end{bmatrix}$$

$$Ans5 = (\mathrm{Sin}(29^{o}) = (\mathrm{Sqrt}(0.2350) = 0.485)), \quad \begin{bmatrix} M \\ U \\ T \end{bmatrix}$$

$$Ans6 = (\mathrm{Cos}(3^{o}) = (\mathrm{Sqrt}(0.9975) = 0.999)), \quad \begin{bmatrix} M \\ U \\ T \end{bmatrix}$$

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TrigonometryExercise4 Answers for No.10868

$$Ans1 = \begin{bmatrix} .1 = \left(\operatorname{Sin}\left(\frac{5\pi}{12}\right) = \frac{\sqrt{2}}{4} + \frac{\sqrt{2}\sqrt{3}}{4}\right) & .2 = \left(\operatorname{Cos}(105^o) = \frac{\sqrt{2}}{4} - \frac{\sqrt{2}\sqrt{3}}{4}\right) \\ .3 = \left(\operatorname{Tan}\left(\frac{\pi}{12}\right) = 2 - \sqrt{3}\right) & .4 = (\operatorname{Cot}(165^o) = -2 - \sqrt{3}) \\ .5 = \left(\operatorname{Sin}\left(-\frac{5\pi}{12}\right) = -\frac{\sqrt{2}}{4} - \frac{\sqrt{2}\sqrt{3}}{4}\right) & .6 = \left(\operatorname{Cos}((\text{-}345)^o) = \frac{\sqrt{2}}{4} + \frac{\sqrt{2}\sqrt{3}}{4}\right) \\ .7 = \left(\operatorname{Csc}\left(\frac{19\pi}{12}\right) = -\sqrt{2}\sqrt{3} + \sqrt{2}\right) & .8 = \left(\operatorname{Tan}\left(-\frac{19\pi}{12}\right) = 2 + \sqrt{3}\right) \end{bmatrix}, \begin{bmatrix} :) \\ :(\\ M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \\ :) \\ :(\end{bmatrix}$$

$$Ans2 = \begin{bmatrix} .1 = \left(\operatorname{Cos}(57^o)\operatorname{Cos}(12^o) + \operatorname{Sin}(57^o)\operatorname{Sin}(12^o) = \left(\operatorname{Cos}(45^o) = \frac{\sqrt{2}}{2}\right)\right) & .2 = \left(1 - 2\operatorname{Sin}\left(\frac{\pi}{8}\right)^2 = \left(\operatorname{Cos}\left(\frac{\pi}{4}\right) = \frac{\sqrt{2}}{2}\right)\right) \\ .3 = \left(\operatorname{Cos}\left(\frac{2\pi}{9}\right)\operatorname{Cos}\left(\frac{\pi}{9}\right) - \operatorname{Sin}\left(\frac{2\pi}{9}\right)\operatorname{Sin}\left(\frac{\pi}{9}\right) = \left(\operatorname{Cos}\left(\frac{\pi}{3}\right) = \frac{1}{2}\right)\right) & .4 = \left(\frac{2\operatorname{Tan}\left(\frac{\pi}{12}\right)}{1 - \operatorname{Tan}\left(\frac{\pi}{12}\right)^2} = \left(\operatorname{Tan}\left(\frac{\pi}{6}\right) = \operatorname{Tan}\left(\frac{\pi}{6}\right)\right)\right) \\ .5 = \left(\operatorname{Sin}(20^o)\operatorname{Cos}(10^o) + \operatorname{Cos}(20^o)\operatorname{Sin}(10^o) = \left(\operatorname{Sin}(30^o) = \frac{1}{2}\right)\right) & .6 = \left(2\operatorname{Sin}(22.5^o)\operatorname{Cos}(22.5^o) = \left(\operatorname{Sin}(45^o) = \frac{\sqrt{2}}{2}\right)\right) \\ .7 = \left(\operatorname{Sin}(40^o)\operatorname{Cos}(10^o) - \operatorname{Cos}(40^o)\operatorname{Sin}(10^o) = \left(\operatorname{Sin}(30^o) = \frac{1}{2}\right)\right) & .8 = \left(2\operatorname{Cos}\left(\frac{\pi}{12}\right)^2 - 1 = \left(\operatorname{Cos}\left(\frac{\pi}{6}\right) = \frac{\sqrt{3}}{2}\right)\right) \\ .9 = \left(\operatorname{Cos}(15^o)^2 - \operatorname{Sin}(15^o)^2 = \left(\operatorname{Cos}(30^o) = \frac{\sqrt{3}}{2}\right)\right) & .10 = \left(\frac{\operatorname{Tan}\left(\frac{2\pi}{5}\right) - \operatorname{Tan}\left(\frac{\pi}{15}\right)}{1 + \operatorname{Tan}\left(\frac{2\pi}{5}\right)\operatorname{Tan}\left(\frac{\pi}{15}\right)} = \left(\operatorname{Tan}\left(\frac{\pi}{3}\right) = \sqrt{3}\right)\right) \end{bmatrix}, \begin{bmatrix} :) \\ :(\\ :) \\ :(\\ \begin{bmatrix} \begin{bmatrix} M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \end{bmatrix} \end{bmatrix} \\ :) \\ :(\\ :) \\ :(\\ :) \\ :(\end{bmatrix}$$

$$Ans3 = \begin{bmatrix} .1 = \left(\operatorname{Sin}(\alpha) = \frac{\sqrt{7}}{4}\right) & .2 = \left(\operatorname{Cos}(\beta) = -\frac{2\sqrt{6}}{7}\right) \\ .3 = \left(\operatorname{Tan}(\beta) = \frac{5\sqrt{6}}{12}\right) & .4 = \left(\operatorname{Sin}(\alpha + \beta) = -\frac{\sqrt{7}\sqrt{6}}{14} - \frac{15}{28}\right) \\ .5 = \left(\operatorname{Cos}(\alpha - \beta) = -\frac{3\sqrt{6}}{14} - \frac{5\sqrt{7}}{28}\right) & .6 = \left(\operatorname{Tan}(\beta - \alpha) = \frac{160\sqrt{6}}{41} - \frac{147\sqrt{7}}{41}\right) \\ .7 = \left(\operatorname{Sin}(2\beta) = \frac{20\sqrt{6}}{49}\right) & .8 = (\operatorname{Tan}(2\alpha) = 3\sqrt{7}) \end{bmatrix}, \quad Ans4 = \begin{bmatrix} .1 = \left(\operatorname{Cos}(\alpha) = \frac{2\sqrt{6}}{7}\right) & .2 = \left(\operatorname{Sin}(\beta) = \frac{2\sqrt{14}}{9}\right) \\ .3 = \left(\operatorname{Tan}(\beta) = -\frac{2\sqrt{14}}{5}\right) & .4 = \left(\operatorname{Sin}(\alpha - \beta) = \frac{25}{63} - \frac{4\sqrt{6}\sqrt{14}}{63}\right) \\ .5 = \left(\operatorname{Cos}(\alpha + \beta) = -\frac{10\sqrt{6}}{63} + \frac{10\sqrt{14}}{63}\right) & .6 = \left(\operatorname{Tan}(\beta - \alpha) = \frac{49\sqrt{2}\sqrt{7}}{80} - \frac{81\sqrt{2}\sqrt{3}}{80}\right) \\ .7 = \left(\operatorname{Cos}(2\beta) = \frac{\text{-}31}{81}\right) & .8 = (\operatorname{Tan}(2\alpha) = 20\sqrt{6}) \end{bmatrix}, \begin{bmatrix} :) \\ :(\\ M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \\ :) \\ :(\end{bmatrix}$$

$$Ans5 = (\operatorname{Cos}(18^o) = (\operatorname{Sqrt}(0.9045) = 0.951)), \quad \begin{bmatrix} M \\ U \\ T \end{bmatrix}$$

$$Ans6 = (\operatorname{Sin}(42^o) = (\operatorname{Sqrt}(0.4475) = 0.669)), \quad \begin{bmatrix} M \\ U \\ T \end{bmatrix}$$

$$Ans1=\begin{bmatrix} .1=\left(\text{Cos}(75^{o})=\frac{\sqrt{2}\sqrt{3}}{4}-\frac{\sqrt{2}}{4}\right) & .2=\left(\text{Sin}\left(\frac{7\pi}{12}\right)=\frac{\sqrt{2}}{4}+\frac{\sqrt{2}\sqrt{3}}{4}\right)\\ .3=\left(\text{Tan}\left(\frac{\pi}{12}\right)=2-\sqrt{3}\right) & .4=\left(\text{Tan}\left(\frac{11\pi}{12}\right)=-2+\sqrt{3}\right)\\ .5=(\text{Csc}((-15)^{o})=-\sqrt{2}\sqrt{3}-\sqrt{2}) & .6=\left(\text{Cos}((-105)^{o})=\frac{\sqrt{2}}{4}-\frac{\sqrt{2}\sqrt{3}}{4}\right)\\ .7=\left(\text{Cot}\left(-\frac{17\pi}{12}\right)=-2+\sqrt{3}\right) & .8=\left(\text{Sec}\left(-\frac{23\pi}{12}\right)=\sqrt{2}\sqrt{3}-\sqrt{2}\right)\end{bmatrix},\ \begin{bmatrix}:)\\:(\\M\\a\\t\\h\\@\\M\\U\\T\\:)\\:(\end{bmatrix}$$

$$Ans2=\begin{bmatrix} .1=\left(\frac{2\,\text{Tan}\left(\frac{\pi}{8}\right)}{1-\text{Tan}\left(\frac{\pi}{8}\right)^{2}}=\left(\text{Tan}\left(\frac{\pi}{4}\right)=\text{Tan}\left(\frac{\pi}{4}\right)\right)\right) & .2=\left(\text{Sin}(42^{o})\,\text{Cos}(12^{o})-\text{Cos}(42^{o})\,\text{Sin}(12^{o})=\left(\text{Sin}(30^{o})=\frac{1}{2}\right)\right)\\ .3=\left(\left(2\,\text{Cos}\left(\frac{\pi}{8}\right)\right)^{2}-1=\left(\text{Cos}\left(\frac{\pi}{4}\right)=\frac{\sqrt{2}}{2}\right)\right) & .4=\left(\text{Sin}(20^{o})\,\text{Cos}(10^{o})+\text{Cos}(20^{o})\,\text{Sin}(10^{o})=\left(\text{Sin}(30^{o})=\frac{1}{2}\right)\right)\\ .5=\left(\frac{\text{Tan}\left(\frac{\pi}{15}\right)+\text{Tan}\left(\frac{11\pi}{60}\right)}{1-\text{Tan}\left(\frac{\pi}{15}\right)\text{Tan}\left(\frac{11\pi}{60}\right)}=\left(\text{Tan}\left(\frac{\pi}{4}\right)=1\right)\right) & .6=\left(2\,\text{Sin}(22.5^{o})\,\text{Cos}(22.5^{o})=\left(\text{Sin}(45^{o})=\frac{\sqrt{2}}{2}\right)\right)\\ .7=\left(\text{Cos}\left(\frac{5\pi}{18}\right)\text{Cos}\left(\frac{\pi}{18}\right)-\text{Sin}\left(\frac{5\pi}{18}\right)\text{Sin}\left(\frac{\pi}{18}\right)=\left(\text{Cos}\left(\frac{\pi}{3}\right)=\frac{1}{2}\right)\right) & .8=\left(\text{Cos}\left(\frac{7\pi}{18}\right)\text{Cos}\left(\frac{\pi}{18}\right)+\text{Sin}\left(\frac{7\pi}{18}\right)\text{Sin}\left(\frac{\pi}{18}\right)=\left(\text{Cos}\left(\frac{\pi}{3}\right)=\frac{1}{2}\right)\right)\\ .9=\left(\left(1-2\,\text{Sin}\left(\frac{\pi}{12}\right)\right)^{2}=\left(\text{Cos}\left(\frac{\pi}{6}\right)=\frac{\sqrt{3}}{2}\right)\right) & .10=\left(\text{Cos}(15^{o})^{2}-\text{Sin}(15^{o})^{2}=\left(\text{Cos}(30^{o})=\frac{\sqrt{3}}{2}\right)\right)\end{bmatrix},\ \begin{bmatrix}:)\\:(\\:)\\:(\\ \left[\begin{bmatrix}M\\a\\t\\h\\@\\M\\U\\T\end{bmatrix}\right]\\:)\\:(\\:)\\:(\\:)\\:(\end{bmatrix}$$

$$Ans3=\begin{bmatrix} .1=\left(\text{Cos}(\alpha)=\frac{\sqrt{7}}{4}\right) & .2=\left(\text{Sin}(\beta)=-\frac{\sqrt{65}}{9}\right)\\ .3=\left(\text{Tan}(\alpha)=\frac{3\sqrt{7}}{7}\right) & .4=\left(\text{Sin}(\alpha+\beta)=-\frac{1}{3}-\frac{\sqrt{7}\sqrt{65}}{36}\right)\\ .5=\left(\text{Cos}(\alpha-\beta)=-\frac{\sqrt{7}}{9}-\frac{\sqrt{65}}{12}\right) & .6=\left(\text{Tan}(\beta-\alpha)=-\frac{64\sqrt{65}}{473}+\frac{243\sqrt{7}}{473}\right)\\ .7=\left(\text{Cos}(2\beta)=\frac{-49}{81}\right) & .8=(\text{Tan}(2\alpha)=-3\sqrt{7})\end{bmatrix},\ Ans4=\begin{bmatrix} .1=\left(\text{Cos}(\alpha)=\frac{2\sqrt{6}}{7}\right) & .2=\left(\text{Sin}(\beta)=\frac{3\sqrt{5}}{7}\right)\\ .3=\left(\text{Tan}(\alpha)=-\frac{5\sqrt{6}}{12}\right) & .4=\left(\text{Sin}(\alpha-\beta)=\frac{10}{49}-\frac{6\sqrt{6}\sqrt{5}}{49}\right)\\ .5=\left(\text{Cos}(\beta-\alpha)=-\frac{4\sqrt{6}}{49}-\frac{15\sqrt{5}}{49}\right) & .6=\left(\text{Tan}(\alpha+\beta)=\frac{10\sqrt{6}}{21}+\frac{2\sqrt{5}}{7}\right)\\ .7=\left(\text{Sin}(2\alpha)=-\frac{20\sqrt{6}}{49}\right) & .8=\left(\text{Tan}(2\beta)=\frac{12\sqrt{5}}{41}\right)\end{bmatrix},\ \begin{bmatrix}:)\\:(\\M\\a\\t\\h\\@\\M\\U\\T\\:)\\:(\end{bmatrix}$$

$$Ans5=(\text{Sin}(37^{o})=(\text{Sqrt}(0.3620)=0.602)),\ \begin{bmatrix}M\\U\\T\end{bmatrix}$$

$$Ans6=(\text{Cos}(17^{o})=(\text{Sqrt}(0.9145)=0.956)),\ \begin{bmatrix}M\\U\\T\end{bmatrix}$$

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$$Ans1 = \begin{bmatrix} .1 = \left(\mathrm{Sin}\left(\frac{7\pi}{12}\right) = \frac{\sqrt{2}}{4} + \frac{\sqrt{2}\sqrt{3}}{4}\right) & .2 = \left(\mathrm{Cos}(75^o) = \frac{\sqrt{2}\sqrt{3}}{4} - \frac{\sqrt{2}}{4}\right) \\ .3 = (\mathrm{Tan}(15^o) = 2 - \sqrt{3}) & .4 = \left(\mathrm{Sec}\left(-\frac{5\pi}{12}\right) = \sqrt{2}\sqrt{3} + \sqrt{2}\right) \\ .5 = (\mathrm{Csc}((-255)^o) = \sqrt{2}\sqrt{3} - \sqrt{2}) & .6 = \left(\mathrm{Tan}\left(\frac{19\pi}{12}\right) = -2 - \sqrt{3}\right) \\ .7 = \left(\mathrm{Sin}((-105)^o) = -\frac{\sqrt{2}}{4} - \frac{\sqrt{2}\sqrt{3}}{4}\right) & .8 = \left(\mathrm{Cot}\left(-\frac{11\pi}{12}\right) = 2 + \sqrt{3}\right) \end{bmatrix}, \ , \begin{bmatrix} :) \\ :(\\ M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \\ :) \\ :(\end{bmatrix}$$

$$Ans2 = \begin{bmatrix} .1 = \left(\mathrm{Cos}\left(\frac{\pi}{8}\right)^2 - \mathrm{Sin}\left(\frac{\pi}{8}\right)^2 = \left(\mathrm{Cos}\left(\frac{\pi}{4}\right) = \frac{\sqrt{2}}{2}\right)\right) & .2 = \left(\mathrm{Cos}(70^o)\,\mathrm{Cos}(10^o) + \mathrm{Sin}(70^o)\,\mathrm{Sin}(10^o) = \left(\mathrm{Cos}(60^o) = \frac{1}{2}\right)\right) \\ .3 = \left(2\,\mathrm{Cos}\left(\frac{\pi}{12}\right)^2 - 1 = \left(\mathrm{Cos}\left(\frac{\pi}{6}\right) = \frac{\sqrt{3}}{2}\right)\right) & .4 = \left(1 - 2\,\mathrm{Sin}(15^o)^2 = \left(\mathrm{Cos}(30^o) = \frac{\sqrt{3}}{2}\right)\right) \\ .5 = \left(\frac{\mathrm{Tan}(18^o) + \mathrm{Tan}(12^o)}{1 - \mathrm{Tan}(18^o)\,\mathrm{Tan}(12^o)} = \left(\mathrm{Tan}(30^o) = \frac{\sqrt{3}}{3}\right)\right) & .6 = \left(\frac{\mathrm{Tan}\left(\frac{5\pi}{18}\right) - \mathrm{Tan}\left(\frac{\pi}{9}\right)}{1 + \mathrm{Tan}\left(\frac{5\pi}{18}\right)\mathrm{Tan}\left(\frac{\pi}{9}\right)} = \left(\mathrm{Tan}\left(\frac{\pi}{6}\right) = \frac{\sqrt{3}}{3}\right)\right) \\ .7 = \left(\mathrm{Sin}(50^o)\,\mathrm{Cos}(10^o) + \mathrm{Cos}(50^o)\,\mathrm{Sin}(10^o) = \left(\mathrm{Sin}(60^o) = \frac{\sqrt{3}}{2}\right)\right) & .8 = \left(\frac{2\,\mathrm{Tan}\left(\frac{\pi}{12}\right)}{1 - \mathrm{Tan}\left(\frac{\pi}{12}\right)^2} = \left(\mathrm{Tan}\left(\frac{\pi}{6}\right) = \mathrm{Tan}\left(\frac{\pi}{6}\right)\right)\right) \\ .9 = \left(\mathrm{Sin}\left(\frac{11\pi}{36}\right)\mathrm{Cos}\left(\frac{\pi}{18}\right) - \mathrm{Cos}\left(\frac{11\pi}{36}\right)\mathrm{Sin}\left(\frac{\pi}{18}\right) = \left(\mathrm{Sin}\left(\frac{\pi}{4}\right) = \frac{\sqrt{2}}{2}\right)\right) & .10 = \left(2\,\mathrm{Sin}(22.5^o)\,\mathrm{Cos}(22.5^o) = \left(\mathrm{Sin}(45^o) = \frac{\sqrt{2}}{2}\right)\right) \end{bmatrix}, \ , \begin{bmatrix} :) \\ :(\\ :) \\ :(\\ \begin{bmatrix}\begin{bmatrix} M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \end{bmatrix}\end{bmatrix} \\ :) \\ :(\\ :) \\ :(\\ :) \\ :(\end{bmatrix}$$

$$Ans3 = \begin{bmatrix} .1 = \left(\mathrm{Sin}(\alpha) = \frac{\sqrt{55}}{8}\right) & .2 = \left(\mathrm{Cos}(\beta) = \frac{\sqrt{33}}{7}\right) \\ .3 = \left(\mathrm{Tan}(\beta) = -\frac{4\sqrt{33}}{33}\right) & .4 = \left(\mathrm{Sin}(\alpha + \beta) = \frac{\sqrt{55}\sqrt{33}}{56} - \frac{3}{14}\right) \\ .5 = \left(\mathrm{Cos}(\alpha - \beta) = \frac{3\sqrt{33}}{56} - \frac{\sqrt{55}}{14}\right) & .6 = \left(\mathrm{Tan}(\beta - \alpha) = \frac{256\sqrt{3}\sqrt{11}}{583} + \frac{147\sqrt{5}\sqrt{11}}{583}\right) \\ .7 = \left(\mathrm{Cos}(2\alpha) = \frac{-23}{32}\right) & .8 = \left(\mathrm{Tan}(2\beta) = -\frac{8\sqrt{33}}{17}\right) \end{bmatrix}, \ , Ans4 = \begin{bmatrix} .1 = \left(\mathrm{Sin}(\alpha) = -\frac{\sqrt{3}}{2}\right) & .2 = \left(\mathrm{Cos}(\beta) = -\frac{\sqrt{5}}{3}\right) \\ .3 = (\mathrm{Tan}(\alpha) = \sqrt{3}) & .4 = \left(\mathrm{Sin}(\alpha + \beta) = \frac{\sqrt{5}\sqrt{3}}{6} - \frac{1}{3}\right) \\ .5 = \left(\mathrm{Cos}(\alpha - \beta) = -\frac{\sqrt{3}}{3} + \frac{\sqrt{5}}{6}\right) & .6 = \left(\mathrm{Tan}(\beta - \alpha) = \frac{8\sqrt{5}}{7} + \frac{9\sqrt{3}}{7}\right) \\ .7 = \left(\mathrm{Cos}(2\beta) = \frac{1}{9}\right) & .8 = (\mathrm{Tan}(2\alpha) = -\sqrt{3}) \end{bmatrix}, \ , \begin{bmatrix} :) \\ :(\\ M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \\ :) \\ :(\end{bmatrix}$$

$$Ans5 = (\mathrm{Sin}(32^o) = (\mathrm{Sqrt}(0.2810) = 0.530)), \ , \begin{bmatrix} M \\ U \\ T \end{bmatrix}$$

$$Ans6 = (\mathrm{Cos}(18^o) = (\mathrm{Sqrt}(0.9045) = 0.951)), \ , \begin{bmatrix} M \\ U \\ T \end{bmatrix}$$

$$Ans1 = \begin{bmatrix} .1 = \left(\mathrm{Cos}(75^{o}) = \frac{\sqrt{2}\sqrt{3}}{4} - \frac{\sqrt{2}}{4}\right) & .2 = \left(\mathrm{Sin}\left(\frac{7\pi}{12}\right) = \frac{\sqrt{2}}{4} + \frac{\sqrt{2}\sqrt{3}}{4}\right) \\ .3 = (\mathrm{Tan}(15^{o}) = 2 - \sqrt{3}) & .4 = \left(\mathrm{Cot}\left(-\frac{5\pi}{12}\right) = -2 + \sqrt{3}\right) \\ .5 = \left(\mathrm{Cos}((-345)^{o}) = \frac{\sqrt{2}}{4} + \frac{\sqrt{2}\sqrt{3}}{4}\right) & .6 = \left(\mathrm{Csc}\left(\frac{19\pi}{12}\right) = -\sqrt{2}\sqrt{3} + \sqrt{2}\right) \\ .7 = (\mathrm{Sec}(255^{o}) = -\sqrt{2}\sqrt{3} - \sqrt{2}) & .8 = (\mathrm{Tan}(165^{o}) = -2 + \sqrt{3}) \end{bmatrix}, \ , \begin{bmatrix} :) \\ :(\\ M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \\ :) \\ :(\end{bmatrix}$$

$$Ans2 = \begin{bmatrix} .1 = \left(\frac{\mathrm{Tan}\left(\frac{5\pi}{36}\right) + \mathrm{Tan}\left(\frac{\pi}{36}\right)}{1 - \mathrm{Tan}\left(\frac{5\pi}{36}\right)\mathrm{Tan}\left(\frac{\pi}{36}\right)} = \left(\mathrm{Tan}\left(\frac{\pi}{6}\right) = \frac{\sqrt{3}}{3}\right)\right) & .2 = \left(\mathrm{Cos}(85^{o})\,\mathrm{Cos}(25^{o}) + \mathrm{Sin}(85^{o})\,\mathrm{Sin}(25^{o}) = \left(\mathrm{Cos}(60^{o}) = \frac{1}{2}\right)\right) \\ .3 = \left(\frac{2\,\mathrm{Tan}\left(\frac{\pi}{8}\right)}{1 - \mathrm{Tan}\left(\frac{\pi}{8}\right)^2} = \left(\mathrm{Tan}\left(\frac{\pi}{4}\right) = \mathrm{Tan}\left(\frac{\pi}{4}\right)\right)\right) & .4 = \left(\mathrm{Sin}(40^{o})\,\mathrm{Cos}(10^{o}) - \mathrm{Cos}(40^{o})\,\mathrm{Sin}(10^{o}) = \left(\mathrm{Sin}(30^{o}) = \frac{1}{2}\right)\right) \\ .5 = \left(\mathrm{Sin}(48^{o})\,\mathrm{Cos}(12^{o}) + \mathrm{Cos}(48^{o})\,\mathrm{Sin}(12^{o}) = \left(\mathrm{Sin}(60^{o}) = \frac{\sqrt{3}}{2}\right)\right) & .6 = \left(2\,\mathrm{Cos}\left(\frac{\pi}{12}\right)^2 - 1 = \left(\mathrm{Cos}\left(\frac{\pi}{6}\right) = \frac{\sqrt{3}}{2}\right)\right) \\ .7 = \left(1 - 2\,\mathrm{Sin}\left(\frac{\pi}{8}\right)^2 = \left(\mathrm{Cos}\left(\frac{\pi}{4}\right) = \frac{\sqrt{2}}{2}\right)\right) & .8 = \left(\mathrm{Cos}(15^{o})^2 - \mathrm{Sin}(15^{o})^2 = \left(\mathrm{Cos}(30^{o}) = \frac{\sqrt{3}}{2}\right)\right) \\ .9 = \left(2\,\mathrm{Sin}(22.5^{o})\,\mathrm{Cos}(22.5^{o}) = \left(\mathrm{Sin}(45^{o}) = \frac{\sqrt{2}}{2}\right)\right) & .10 = \left(\mathrm{Cos}\left(\frac{\pi}{6}\right)\mathrm{Cos}\left(\frac{\pi}{12}\right) - \mathrm{Sin}\left(\frac{\pi}{6}\right)\mathrm{Sin}\left(\frac{\pi}{12}\right) = \left(\mathrm{Cos}\left(\frac{\pi}{4}\right) = \frac{\sqrt{2}}{2}\right)\right) \end{bmatrix}, \ , \begin{bmatrix} :) \\ :(\\ :) \\ :(\\ \left[\left[\begin{matrix} M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \end{matrix}\right]\right] \\ :) \\ :(\\ :) \\ :(\\ :) \\ :(\end{bmatrix}$$

$$Ans3 = \begin{bmatrix} .1 = \left(\mathrm{Cos}(\alpha) = \frac{\sqrt{39}}{8}\right) & .2 = \left(\mathrm{Sin}(\beta) = \frac{\sqrt{15}}{4}\right) \\ .3 = (\mathrm{Tan}(\beta) = -\sqrt{15}) & .4 = \left(\mathrm{Sin}(\alpha - \beta) = -\frac{5}{32} - \frac{\sqrt{39}\sqrt{15}}{32}\right) \\ .5 = \left(\mathrm{Cos}(\alpha + \beta) = -\frac{\sqrt{39}}{32} - \frac{5\sqrt{15}}{32}\right) & .6 = \left(\mathrm{Tan}(\beta - \alpha) = \frac{4\sqrt{5}\sqrt{3}}{21} + \frac{5\sqrt{3}\sqrt{13}}{21}\right) \\ .7 = \left(\mathrm{Sin}(2\alpha) = \frac{5\sqrt{39}}{32}\right) & .8 = \left(\mathrm{Tan}(2\beta) = \frac{\sqrt{15}}{7}\right) \end{bmatrix}, \ , Ans4 = \begin{bmatrix} .1 = \left(\mathrm{Cos}(\alpha) = \frac{\sqrt{35}}{6}\right) & .2 = \left(\mathrm{Sin}(\beta) = -\frac{3\sqrt{5}}{7}\right) \\ .3 = \left(\mathrm{Tan}(\alpha) = -\frac{\sqrt{35}}{35}\right) & .4 = \left(\mathrm{Sin}(\alpha + \beta) = \frac{1}{21} - \frac{\sqrt{35}\sqrt{5}}{14}\right) \\ .5 = \left(\mathrm{Cos}(\beta - \alpha) = -\frac{\sqrt{35}}{21} + \frac{\sqrt{5}}{14}\right) & .6 = \left(\mathrm{Tan}(\alpha - \beta) = -\frac{49\sqrt{5}\sqrt{7}}{95} - \frac{216\sqrt{5}}{95}\right) \\ .7 = \left(\mathrm{Cos}(2\beta) = \frac{-41}{49}\right) & .8 = \left(\mathrm{Tan}(2\alpha) = -\frac{\sqrt{35}}{17}\right) \end{bmatrix}, \ , \begin{bmatrix} :) \\ :(\\ M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \\ :) \\ :(\end{bmatrix}$$

$$Ans5 = (\mathrm{Sin}(5^{o}) = (\mathrm{Sqrt}(0.0075) = 0.087)), \ , \begin{bmatrix} M \\ U \\ T \end{bmatrix}$$

$$Ans6 = (\mathrm{Cos}(19^{o}) = (\mathrm{Sqrt}(0.8940) = 0.946)), \ , \begin{bmatrix} M \\ U \\ T \end{bmatrix}$$

$$Ans1 = \begin{bmatrix} .1 = \left(\mathrm{Sin}\left(\frac{\pi}{12}\right) = \frac{\sqrt{2}\sqrt{3}}{4} - \frac{\sqrt{2}}{4}\right) & .2 = \left(\mathrm{Cos}(105^o) = \frac{\sqrt{2}}{4} - \frac{\sqrt{2}\sqrt{3}}{4}\right) \\ .3 = \left(\mathrm{Tan}\left(\frac{5\pi}{12}\right) = 2 + \sqrt{3}\right) & .4 = (\mathrm{Sec}((-165)^o) = -\sqrt{2}\sqrt{3} + \sqrt{2}) \\ .5 = \left(\mathrm{Cot}\left(-\frac{\pi}{12}\right) = -2 - \sqrt{3}\right) & .6 = (\mathrm{Tan}((-285)^o) = 2 + \sqrt{3}) \\ .7 = \left(\mathrm{Csc}\left(\frac{19\pi}{12}\right) = -\sqrt{2}\sqrt{3} + \sqrt{2}\right) & .8 = \left(\mathrm{Sin}\left(-\frac{13\pi}{12}\right) = \frac{\sqrt{2}\sqrt{3}}{4} - \frac{\sqrt{2}}{4}\right) \end{bmatrix}, \begin{bmatrix} \underline{:)} \\ :(\\ M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \\ \underline{:)} \\ :(\end{bmatrix}$$

$$Ans2 = \begin{bmatrix} .1 = (\mathrm{Cos}(75^o)\,\mathrm{Cos}(15^o) - \mathrm{Sin}(75^o)\,\mathrm{Sin}(15^o) = (\mathrm{Cos}(90^o) = 0)) & .2 = \left(\mathrm{Cos}(22.5^o)^2 - \mathrm{Sin}(22.5^o)^2 = \left(\mathrm{Cos}(45^o) = \frac{\sqrt{2}}{2}\right)\right) \\ .3 = \left(\mathrm{Sin}\left(\frac{\pi}{15}\right)\mathrm{Cos}\left(\frac{\pi}{10}\right) + \mathrm{Cos}\left(\frac{\pi}{15}\right)\mathrm{Sin}\left(\frac{\pi}{10}\right) = \left(\mathrm{Sin}\left(\frac{\pi}{6}\right) = \frac{1}{2}\right)\right) & .4 = \left(1 - 2\,\mathrm{Sin}\left(\frac{\pi}{12}\right)^2 = \left(\mathrm{Cos}\left(\frac{\pi}{6}\right) = \frac{\sqrt{3}}{2}\right)\right) \\ .5 = (\mathrm{Cos}(110^o)\,\mathrm{Cos}(20^o) + \mathrm{Sin}(110^o)\,\mathrm{Sin}(20^o) = (\mathrm{Cos}(90^o) = 0)) & .6 = \left(\frac{2\,\mathrm{Tan}(15^o)}{1 - \mathrm{Tan}(15^o)^2} = \left(\mathrm{Tan}(30^o) = \frac{\sqrt{3}}{3}\right)\right) \\ .7 = \left(\frac{\mathrm{Tan}\left(\frac{\pi}{15}\right) + \mathrm{Tan}\left(\frac{11\pi}{60}\right)}{1 - \mathrm{Tan}\left(\frac{\pi}{15}\right)\mathrm{Tan}\left(\frac{11\pi}{60}\right)} = \left(\mathrm{Tan}\left(\frac{\pi}{4}\right) = 1\right)\right) & .8 = \left(2\,\mathrm{Sin}\left(\frac{\pi}{8}\right)\mathrm{Cos}\left(\frac{\pi}{8}\right) = \left(\mathrm{Sin}\left(\frac{\pi}{4}\right) = \frac{\sqrt{2}}{2}\right)\right) \\ .9 = \left(2\,\mathrm{Cos}(15^o)^2 - 1 = \left(\mathrm{Cos}(30^o) = \frac{\sqrt{3}}{2}\right)\right) & .10 = \left(\mathrm{Sin}(40^o)\,\mathrm{Cos}(10^o) - \mathrm{Cos}(40^o)\,\mathrm{Sin}(10^o) = \left(\mathrm{Sin}(30^o) = \frac{1}{2}\right)\right) \end{bmatrix}, \begin{bmatrix} \underline{:)} \\ :(\\ \underline{:)} \\ :(\\ \left[\left[\begin{matrix} M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \end{matrix}\right]\right] \\ \underline{:)} \\ :(\\ \underline{:)} \\ :(\\ \underline{:)} \\ :(\end{bmatrix}$$

$$Ans3 = \begin{bmatrix} .1 = \left(\mathrm{Cos}(\alpha) = \frac{\sqrt{65}}{9}\right) & .2 = \left(\mathrm{Sin}(\beta) = -\frac{3\sqrt{5}}{7}\right) \\ .3 = \left(\mathrm{Tan}(\alpha) = \frac{4\sqrt{65}}{65}\right) & .4 = \left(\mathrm{Sin}(\alpha - \beta) = -\frac{8}{63} + \frac{\sqrt{65}\sqrt{5}}{21}\right) \\ .5 = \left(\mathrm{Cos}(\alpha + \beta) = -\frac{2\sqrt{65}}{63} + \frac{4\sqrt{5}}{21}\right) & .6 = \left(\mathrm{Tan}(\beta - \alpha) = -\frac{243\sqrt{5}}{230} + \frac{49\sqrt{13}\sqrt{5}}{115}\right) \\ .7 = \left(\mathrm{Sin}(2\beta) = \frac{12\sqrt{5}}{49}\right) & .8 = \left(\mathrm{Tan}(2\alpha) = \frac{8\sqrt{65}}{49}\right) \end{bmatrix}, \quad Ans4 = \begin{bmatrix} .1 = \left(\mathrm{Cos}(\alpha) = \frac{\sqrt{3}}{2}\right) & .2 = \left(\mathrm{Sin}(\beta) = \frac{\sqrt{35}}{6}\right) \\ .3 = (\mathrm{Tan}(\beta) = -\sqrt{35}) & .4 = \left(\mathrm{Sin}(\beta - \alpha) = \frac{\sqrt{3}\sqrt{35}}{12} - \frac{1}{12}\right) \\ .5 = \left(\mathrm{Cos}(\alpha + \beta) = -\frac{\sqrt{3}}{12} + \frac{\sqrt{35}}{12}\right) & .6 = \left(\mathrm{Tan}(\alpha - \beta) = \frac{9\sqrt{3}}{8} - \frac{\sqrt{35}}{8}\right) \\ .7 = \left(\mathrm{Cos}(2\beta) = \frac{-17}{18}\right) & .8 = (\mathrm{Tan}(2\alpha) = -\sqrt{3}) \end{bmatrix}, \begin{bmatrix} \underline{:)} \\ :(\\ M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \\ \underline{:)} \\ :(\end{bmatrix}$$

$$Ans5 = (\mathrm{Cos}(39^o) = (\mathrm{Sqrt}(0.6040) = 0.777)), \begin{bmatrix} M \\ U \\ T \end{bmatrix}$$

$$Ans6 = (\mathrm{Sin}(17^o) = (\mathrm{Sqrt}(0.0855) = 0.292)), \begin{bmatrix} M \\ U \\ T \end{bmatrix}$$

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$$Ans1 = \begin{bmatrix} .1 = \left(\cos\left(\frac{7\pi}{12}\right) = \frac{\sqrt{2}}{4} - \frac{\sqrt{2}\sqrt{3}}{4}\right) & .2 = \left(\sin(15^o) = \frac{\sqrt{2}\sqrt{3}}{4} - \frac{\sqrt{2}}{4}\right) \\ .3 = \left(\tan\left(\frac{5\pi}{12}\right) = 2 + \sqrt{3}\right) & .4 = \left(\cos((-15)^o) = \frac{\sqrt{2}}{4} + \frac{\sqrt{2}\sqrt{3}}{4}\right) \\ .5 = \left(\tan\left(-\frac{23\pi}{12}\right) = 2 - \sqrt{3}\right) & .6 = (\cot((-285)^o) = 2 - \sqrt{3}) \\ .7 = \left(\sec\left(-\frac{11\pi}{12}\right) = -\sqrt{2}\sqrt{3} + \sqrt{2}\right) & .8 = \left(\csc\left(\frac{17\pi}{12}\right) = -\sqrt{2}\sqrt{3} + \sqrt{2}\right) \end{bmatrix}, \begin{bmatrix} :) \\ :(\\ M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \\ :) \\ :(\end{bmatrix}$$

$$Ans2 = \begin{bmatrix} .1 = \left(\cos(80^o)\cos(20^o) + \sin(80^o)\sin(20^o) = \left(\cos(60^o) = \frac{1}{2}\right)\right) & .2 = \left(2\cos\left(\frac{\pi}{12}\right)^2 - 1 = \left(\cos\left(\frac{\pi}{6}\right) = \frac{\sqrt{3}}{2}\right)\right) \\ .3 = \left(2\sin(15^o)\cos(15^o) = \left(\sin(30^o) = \frac{1}{2}\right)\right) & .4 = \left(\frac{\tan\left(\frac{5\pi}{36}\right) + \tan\left(\frac{\pi}{36}\right)}{1 - \tan\left(\frac{5\pi}{36}\right)\tan\left(\frac{\pi}{36}\right)} = \left(\tan\left(\frac{\pi}{6}\right) = \frac{\sqrt{3}}{3}\right)\right) \\ .5 = \left(\sin(57^o)\cos(12^o) - \cos(57^o)\sin(12^o) = \left(\sin(45^o) = \frac{\sqrt{2}}{2}\right)\right) & .6 = \left(\cos\left(\frac{\pi}{8}\right)^2 - \sin\left(\frac{\pi}{8}\right)^2 = \left(\cos\left(\frac{\pi}{4}\right) = \frac{\sqrt{2}}{2}\right)\right) \\ .7 = \left(\sin(50^o)\cos(10^o) + \cos(50^o)\sin(10^o) = \left(\sin(60^o) = \frac{\sqrt{3}}{2}\right)\right) & .8 = \left(\frac{\tan\left(\frac{7\pi}{36}\right) - \tan\left(\frac{\pi}{36}\right)}{1 + \tan\left(\frac{7\pi}{36}\right)\tan\left(\frac{\pi}{36}\right)} = \left(\tan\left(\frac{\pi}{6}\right) = \frac{\sqrt{3}}{3}\right)\right) \\ .9 = \left(1 - 2\sin(22.5^o)^2 = \left(\cos(45^o) = \frac{\sqrt{2}}{2}\right)\right) & .10 = \left(\frac{2\tan(15^o)}{1 - \tan(15^o)^2} = \left(\tan(30^o) = \frac{\sqrt{3}}{3}\right)\right) \end{bmatrix}, \begin{bmatrix} :) \\ :(\\ :) \\ :(\\ \left[\left[\begin{matrix} M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \end{matrix}\right]\right] \\ :) \\ :(\\ :) \\ :(\\ :) \\ :(\end{bmatrix}$$

$$Ans3 = \begin{bmatrix} .1 = \left(\cos(\alpha) = \frac{\sqrt{5}}{3}\right) & .2 = \left(\sin(\beta) = -\frac{2\sqrt{6}}{5}\right) \\ .3 = \left(\tan(\alpha) = \frac{2\sqrt{5}}{5}\right) & .4 = \left(\sin(\beta - \alpha) = -\frac{2\sqrt{6}\sqrt{5}}{15} - \frac{2}{15}\right) \\ .5 = \left(\cos(\alpha + \beta) = \frac{\sqrt{5}}{15} + \frac{4\sqrt{6}}{15}\right) & .6 = \left(\tan(\alpha - \beta) = -\frac{50\sqrt{5}}{91} - \frac{18\sqrt{6}}{91}\right) \\ .7 = \left(\cos(2\alpha) = \frac{1}{9}\right) & .8 = \left(\tan(2\beta) = \frac{4\sqrt{6}}{23}\right) \end{bmatrix}, \; Ans4 = \begin{bmatrix} .1 = \left(\cos(\alpha) = -\frac{\sqrt{3}}{2}\right) & .2 = \left(\sin(\beta) = -\frac{\sqrt{55}}{8}\right) \\ .3 = \left(\tan(\beta) = \frac{\sqrt{55}}{3}\right) & .4 = \left(\sin(\alpha + \beta) = -\frac{3}{16} + \frac{\sqrt{3}\sqrt{55}}{16}\right) \\ .5 = \left(\cos(\alpha - \beta) = \frac{3\sqrt{3}}{16} - \frac{\sqrt{55}}{16}\right) & .6 = \left(\tan(\beta - \alpha) = -\frac{3\sqrt{55}}{7} - \frac{16\sqrt{3}}{7}\right) \\ .7 = \left(\sin(2\alpha) = -\frac{\sqrt{3}}{2}\right) & .8 = \left(\tan(2\beta) = -\frac{3\sqrt{55}}{23}\right) \end{bmatrix}, \begin{bmatrix} :) \\ :(\\ M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \\ :) \\ :(\end{bmatrix}$$

$$Ans5 = (\cos(5^o) = (\mathrm{Sqrt}(0.9925) = 0.996)), \begin{bmatrix} M \\ U \\ T \end{bmatrix}$$

$$Ans6 = (\sin(27^o) = (\mathrm{Sqrt}(0.2060) = 0.454)), \begin{bmatrix} M \\ U \\ T \end{bmatrix}$$

$$Ans1 = \begin{bmatrix} .1 = \left(\mathrm{Cos}\left(\frac{7\pi}{12}\right) = \frac{\sqrt{2}}{4} - \frac{\sqrt{2}\sqrt{3}}{4}\right) & .2 = \left(\mathrm{Sin}(75^o) = \frac{\sqrt{2}}{4} + \frac{\sqrt{2}\sqrt{3}}{4}\right) \\ .3 = (\mathrm{Tan}(15^o) = 2 - \sqrt{3}) & .4 = (\mathrm{Csc}((-75)^o) = -\sqrt{2}\sqrt{3} + \sqrt{2}) \\ .5 = \left(\mathrm{Sin}\left(\frac{17\pi}{12}\right) = -\frac{\sqrt{2}}{4} - \frac{\sqrt{2}\sqrt{3}}{4}\right) & .6 = (\mathrm{Cot}((-255)^o) = -2 + \sqrt{3}) \\ .7 = \left(\mathrm{Tan}\left(-\frac{13\pi}{12}\right) = -2 + \sqrt{3}\right) & .8 = \left(\mathrm{Cos}((-285)^o) = \frac{\sqrt{2}\sqrt{3}}{4} - \frac{\sqrt{2}}{4}\right) \end{bmatrix}, \quad , \begin{bmatrix} :) \\ :(\\ M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \\ :) \\ :(\end{bmatrix}$$

$$Ans2 = \begin{bmatrix} .1 = \left(2\,\mathrm{Sin}(22.5^o)\,\mathrm{Cos}(22.5^o) = \left(\mathrm{Sin}(45^o) = \frac{\sqrt{2}}{2}\right)\right) & .2 = (\mathrm{Cos}(75^o)\,\mathrm{Cos}(15^o) - \mathrm{Sin}(75^o)\,\mathrm{Sin}(15^o) = (\mathrm{Cos}(90^o) = 0)) \\ .3 = \left(\mathrm{Cos}(15^o)^2 - \mathrm{Sin}(15^o)^2 = \left(\mathrm{Cos}(30^o) = \frac{\sqrt{3}}{2}\right)\right) & .4 = \left(1 - 2\,\mathrm{Sin}\left(\frac{\pi}{12}\right)^2 = \left(\mathrm{Cos}\left(\frac{\pi}{6}\right) = \frac{\sqrt{3}}{2}\right)\right) \\ .5 = \left(\frac{2\,\mathrm{Tan}(15^o)}{1 - \mathrm{Tan}(15^o)^2} = \left(\mathrm{Tan}(30^o) = \frac{\sqrt{3}}{3}\right)\right) & .6 = \left(\mathrm{Cos}(40^o)\,\mathrm{Cos}(10^o) + \mathrm{Sin}(40^o)\,\mathrm{Sin}(10^o) = \left(\mathrm{Cos}(30^o) = \frac{\sqrt{3}}{2}\right)\right) \\ .7 = \left(\mathrm{Sin}\left(\frac{5\pi}{36}\right)\mathrm{Cos}\left(\frac{\pi}{36}\right) + \mathrm{Cos}\left(\frac{5\pi}{36}\right)\mathrm{Sin}\left(\frac{\pi}{36}\right) = \left(\mathrm{Sin}\left(\frac{\pi}{6}\right) = \frac{1}{2}\right)\right) & .8 = \left(\mathrm{Sin}(85^o)\,\mathrm{Cos}(25^o) - \mathrm{Cos}(85^o)\,\mathrm{Sin}(25^o) = \left(\mathrm{Sin}(60^o) = \frac{\sqrt{3}}{2}\right)\right) \\ .9 = \left(2\,\mathrm{Cos}\left(\frac{\pi}{8}\right)^2 - 1 = \left(\mathrm{Cos}\left(\frac{\pi}{4}\right) = \frac{\sqrt{2}}{2}\right)\right) & .10 = \left(\frac{\mathrm{Tan}\left(\frac{\pi}{3}\right) - \mathrm{Tan}\left(\frac{\pi}{12}\right)}{1 + \mathrm{Tan}\left(\frac{\pi}{3}\right)\mathrm{Tan}\left(\frac{\pi}{12}\right)} = \left(\mathrm{Tan}\left(\frac{\pi}{4}\right) = 1\right)\right) \end{bmatrix}, \quad , \begin{bmatrix} :) \\ :(\\ :) \\ :(\\ \left[\left[\begin{matrix} M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \end{matrix}\right]\right] \\ :) \\ :(\\ :) \\ :(\\ :) \\ :(\end{bmatrix}$$

$$Ans3 = \begin{bmatrix} .1 = \left(\mathrm{Cos}(\alpha) = \frac{\sqrt{3}}{2}\right) & .2 = \left(\mathrm{Sin}(\beta) = \frac{2\sqrt{2}}{3}\right) \\ .3 = (\mathrm{Tan}(\beta) = -2\sqrt{2}) & .4 = \left(\mathrm{Sin}(\beta - \alpha) = \frac{1}{6} + \frac{\sqrt{2}\sqrt{3}}{3}\right) \\ .5 = \left(\mathrm{Cos}(\alpha + \beta) = -\frac{\sqrt{3}}{6} - \frac{\sqrt{2}}{3}\right) & .6 = \left(\mathrm{Tan}(\alpha - \beta) = -\frac{9\sqrt{3}}{5} - \frac{8\sqrt{2}}{5}\right) \\ .7 = \left(\mathrm{Cos}(2\alpha) = \frac{1}{2}\right) & .8 = \left(\mathrm{Tan}(2\beta) = \frac{4\sqrt{2}}{7}\right) \end{bmatrix}, \quad , \quad Ans4 = \begin{bmatrix} .1 = \left(\mathrm{Sin}(\alpha) = -\frac{\sqrt{21}}{5}\right) & .2 = \left(\mathrm{Cos}(\beta) = -\frac{\sqrt{11}}{6}\right) \\ .3 = \left(\mathrm{Tan}(\alpha) = -\frac{\sqrt{21}}{2}\right) & .4 = \left(\mathrm{Sin}(\alpha + \beta) = \frac{\sqrt{21}\sqrt{11}}{30} - \frac{1}{3}\right) \\ .5 = \left(\mathrm{Cos}(\beta - \alpha) = -\frac{\sqrt{11}}{15} + \frac{\sqrt{21}}{6}\right) & .6 = \left(\mathrm{Tan}(\alpha - \beta) = \frac{72\sqrt{21}}{481} + \frac{125\sqrt{11}}{481}\right) \\ .7 = \left(\mathrm{Cos}(2\alpha) = \frac{-17}{25}\right) & .8 = \left(\mathrm{Tan}(2\beta) = -\frac{5\sqrt{11}}{7}\right) \end{bmatrix}, \quad , \begin{bmatrix} :) \\ :(\\ M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \\ :) \\ :(\end{bmatrix}$$

$$Ans5 = (\mathrm{Cos}(35^o) = (\mathrm{Sqrt}(0.6710) = 0.819)), \quad , \begin{bmatrix} M \\ U \\ T \end{bmatrix}$$

$$Ans6 = (\mathrm{Sin}(11^o) = (\mathrm{Sqrt}(0.0365) = 0.191)), \quad , \begin{bmatrix} M \\ U \\ T \end{bmatrix}$$

$$Ans1 = \begin{bmatrix} .1 = \left(\text{Cos}(75^o) = \frac{\sqrt{2}\sqrt{3}}{4} - \frac{\sqrt{2}}{4}\right) & .2 = \left(\text{Sin}\left(\frac{7\pi}{12}\right) = \frac{\sqrt{2}}{4} + \frac{\sqrt{2}\sqrt{3}}{4}\right) \\ .3 = \left(\text{Tan}\left(\frac{\pi}{12}\right) = 2 - \sqrt{3}\right) & .4 = \left(\text{Sec}\left(\frac{23\pi}{12}\right) = \sqrt{2}\sqrt{3} - \sqrt{2}\right) \\ .5 = \left(\text{Sin}((-15)^o) = \frac{\sqrt{2}}{4} - \frac{\sqrt{2}\sqrt{3}}{4}\right) & .6 = \left(\text{Cos}((-285)^o) = \frac{\sqrt{2}\sqrt{3}}{4} - \frac{\sqrt{2}}{4}\right) \\ .7 = \left(\text{Cot}\left(-\frac{23\pi}{12}\right) = 2 + \sqrt{3}\right) & .8 = \left(\text{Tan}\left(-\frac{13\pi}{12}\right) = -2 + \sqrt{3}\right) \end{bmatrix}, \; , \begin{bmatrix} :) \\ :(\\ M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \\ :) \\ :(\end{bmatrix}$$

$$Ans2 = \begin{bmatrix} .1 = \left(\frac{2\,\text{Tan}(22.5^o)}{1 - \text{Tan}(22.5^o)^2} = (\text{Tan}(45^o) = 1)\right) & .2 = \left(2\,\text{Sin}(15^o)\,\text{Cos}(15^o) = \left(\text{Sin}(30^o) = \frac{1}{2}\right)\right) \\ .3 = \left(\left(1 - 2\,\text{Sin}\left(\frac{\pi}{12}\right)^2\right) = \left(\text{Cos}\left(\frac{\pi}{6}\right) = \frac{\sqrt{3}}{2}\right)\right) & .4 = \left(\text{Sin}(20^o)\,\text{Cos}(10^o) + \text{Cos}(20^o)\,\text{Sin}(10^o) = \left(\text{Sin}(30^o) = \frac{1}{2}\right)\right) \\ .5 = \left(\text{Cos}\left(\frac{11\pi}{60}\right)\text{Cos}\left(\frac{\pi}{15}\right) - \text{Sin}\left(\frac{11\pi}{60}\right)\text{Sin}\left(\frac{\pi}{15}\right) = \left(\text{Cos}\left(\frac{\pi}{4}\right) = \frac{\sqrt{2}}{2}\right)\right) & .6 = \left(2\,\text{Cos}(22.5^o)^2 - 1 = \left(\text{Cos}(45^o) = \frac{\sqrt{2}}{2}\right)\right) \\ .7 = \left(\text{Cos}\left(\frac{\pi}{8}\right)^2 - \text{Sin}\left(\frac{\pi}{8}\right)^2 = \left(\text{Cos}\left(\frac{\pi}{4}\right) = \frac{\sqrt{2}}{2}\right)\right) & .8 = \left(\frac{\text{Tan}(12^o) + \text{Tan}(48^o)}{1 - \text{Tan}(12^o)\,\text{Tan}(48^o)} = (\text{Tan}(60^o) = \sqrt{3})\right) \\ .9 = \left(\frac{\text{Tan}(40^o) - \text{Tan}(10^o)}{1 + \text{Tan}(40^o)\,\text{Tan}(10^o)} = \left(\text{Tan}(30^o) = \frac{\sqrt{3}}{3}\right)\right) & .10 = \left(\text{Sin}\left(\frac{7\pi}{12}\right)\text{Cos}\left(\frac{\pi}{12}\right) - \text{Cos}\left(\frac{7\pi}{12}\right)\text{Sin}\left(\frac{\pi}{12}\right) = \left(\text{Sin}\left(\frac{\pi}{2}\right) = 1\right)\right) \end{bmatrix}, \; , \begin{bmatrix} :) \\ :(\\ :) \\ :(\\ \left[\left[\begin{matrix} M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \end{matrix}\right]\right] \\ :) \\ :(\\ :) \\ :(\\ :) \\ :(\end{bmatrix}$$

$$Ans3 = \begin{bmatrix} .1 = \left(\text{Sin}(\alpha) = \frac{2\sqrt{2}}{3}\right) & .2 = \left(\text{Cos}(\beta) = -\frac{\sqrt{55}}{8}\right) \\ .3 = (\text{Tan}(\alpha) = 2\sqrt{2}) & .4 = \left(\text{Sin}(\alpha + \beta) = -\frac{\sqrt{55}\sqrt{2}}{12} + \frac{1}{8}\right) \\ .5 = \left(\text{Cos}(\beta - \alpha) = -\frac{\sqrt{55}}{24} + \frac{\sqrt{2}}{4}\right) & .6 = \left(\text{Tan}(\alpha - \beta) = -\frac{27\sqrt{55}}{17} - \frac{128\sqrt{2}}{17}\right) \\ .7 = \left(\text{Sin}(2\alpha) = \frac{4\sqrt{2}}{9}\right) & .8 = \left(\text{Tan}(2\beta) = -\frac{3\sqrt{55}}{23}\right) \end{bmatrix}, \; , \; Ans4 = \begin{bmatrix} .1 = \left(\text{Sin}(\alpha) = -\frac{\sqrt{11}}{6}\right) & .2 = \left(\text{Cos}(\beta) = \frac{\sqrt{15}}{4}\right) \\ .3 = \left(\text{Tan}(\beta) = -\frac{\sqrt{15}}{15}\right) & .4 = \left(\text{Sin}(\beta - \alpha) = \frac{5}{24} + \frac{\sqrt{11}\sqrt{15}}{24}\right) \\ .5 = \left(\text{Cos}(\alpha + \beta) = -\frac{5\sqrt{15}}{24} - \frac{\sqrt{11}}{24}\right) & .6 = \left(\text{Tan}(\alpha - \beta) = \frac{20\sqrt{11}}{91} + \frac{9\sqrt{15}}{91}\right) \\ .7 = \left(\text{Cos}(2\alpha) = \frac{7}{18}\right) & .8 = \left(\text{Tan}(2\beta) = -\frac{\sqrt{15}}{7}\right) \end{bmatrix}, \; , \begin{bmatrix} :) \\ :(\\ M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \\ :) \\ :(\end{bmatrix}$$

$$Ans5 = (\text{Cos}(38^o) = (\text{Sqrt}(0.6210) = 0.788)), \; , \begin{bmatrix} M \\ U \\ T \end{bmatrix}$$

$$Ans6 = (\text{Sin}(23^o) = (\text{Sqrt}(0.1525) = 0.391)), \; , \begin{bmatrix} M \\ U \\ T \end{bmatrix}$$

$$Ans1 = \begin{bmatrix} .1 = \left(\mathrm{Cos}(105^{o}) = \frac{\sqrt{2}}{4} - \frac{\sqrt{2}\sqrt{3}}{4}\right) & .2 = \left(\mathrm{Sin}\left(\frac{\pi}{12}\right) = \frac{\sqrt{2}\sqrt{3}}{4} - \frac{\sqrt{2}}{4}\right) \\ .3 = \left(\mathrm{Tan}\left(\frac{5\pi}{12}\right) = 2 + \sqrt{3}\right) & .4 = \left(\mathrm{Sin}((\text{-}165)^{o}) = \frac{\sqrt{2}}{4} - \frac{\sqrt{2}\sqrt{3}}{4}\right) \\ .5 = \left(\mathrm{Cos}\left(\frac{19\pi}{12}\right) = \frac{\sqrt{2}\sqrt{3}}{4} - \frac{\sqrt{2}}{4}\right) & .6 = (\mathrm{Tan}((\text{-}345)^{o}) = 2 - \sqrt{3}) \\ .7 = \left(\mathrm{Cot}\left(-\frac{7\pi}{12}\right) = 2 - \sqrt{3}\right) & .8 = (\mathrm{Csc}((\text{-}285)^{o}) = \sqrt{2}\sqrt{3} - \sqrt{2}) \end{bmatrix}, \begin{bmatrix} :) \\ :(\\ M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \\ :) \\ :(\end{bmatrix}$$

$$Ans2 = \begin{bmatrix} .1 = \left(\frac{\mathrm{Tan}\left(\frac{19\pi}{60}\right) - \mathrm{Tan}\left(\frac{\pi}{15}\right)}{1 + \mathrm{Tan}\left(\frac{19\pi}{60}\right)\mathrm{Tan}\left(\frac{\pi}{15}\right)} = \left(\mathrm{Tan}\left(\frac{\pi}{4}\right) = 1\right)\right) & .2 = \left(\frac{2\,\mathrm{Tan}\left(\frac{\pi}{12}\right)}{1 - \mathrm{Tan}\left(\frac{\pi}{12}\right)^2} = \left(\mathrm{Tan}\left(\frac{\pi}{6}\right) = \mathrm{Tan}\left(\frac{\pi}{6}\right)\right)\right) \\ .3 = \left(\mathrm{Cos}(22.5^{o})^2 - \mathrm{Sin}(22.5^{o})^2 = \left(\mathrm{Cos}(45^{o}) = \frac{\sqrt{2}}{2}\right)\right) & .4 = \left(\frac{\mathrm{Tan}(35^{o}) + \mathrm{Tan}(25^{o})}{1 - \mathrm{Tan}(35^{o})\,\mathrm{Tan}(25^{o})} = (\mathrm{Tan}(60^{o}) = \sqrt{3})\right) \\ .5 = \left(\mathrm{Cos}(35^{o})\,\mathrm{Cos}(5^{o}) + \mathrm{Sin}(35^{o})\,\mathrm{Sin}(5^{o}) = \left(\mathrm{Cos}(30^{o}) = \frac{\sqrt{3}}{2}\right)\right) & .6 = \left(\mathrm{Sin}\left(\frac{7\pi}{36}\right)\mathrm{Cos}\left(\frac{\pi}{18}\right) + \mathrm{Cos}\left(\frac{7\pi}{36}\right)\mathrm{Sin}\left(\frac{\pi}{18}\right) = \left(\mathrm{Sin}\left(\frac{\pi}{4}\right) = \frac{\sqrt{2}}{2}\right)\right) \\ .7 = \left(\mathrm{Sin}\left(\frac{17\pi}{30}\right)\mathrm{Cos}\left(\frac{\pi}{15}\right) - \mathrm{Cos}\left(\frac{17\pi}{30}\right)\mathrm{Sin}\left(\frac{\pi}{15}\right) = \left(\mathrm{Sin}\left(\frac{\pi}{2}\right) = 1\right)\right) & .8 = \left(2\,\mathrm{Cos}(15^{o})^2 - 1 = \left(\mathrm{Cos}(30^{o}) = \frac{\sqrt{3}}{2}\right)\right) \\ .9 = \left(2\,\mathrm{Sin}\left(\frac{\pi}{8}\right)\mathrm{Cos}\left(\frac{\pi}{8}\right) = \left(\mathrm{Sin}\left(\frac{\pi}{4}\right) = \frac{\sqrt{2}}{2}\right)\right) & .10 = \left(1 - 2\,\mathrm{Sin}\left(\frac{\pi}{12}\right)^2 = \left(\mathrm{Cos}\left(\frac{\pi}{6}\right) = \frac{\sqrt{3}}{2}\right)\right) \end{bmatrix}, \begin{bmatrix} :) \\ :(\\ :) \\ :(\\ \begin{bmatrix}\begin{bmatrix} M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \end{bmatrix}\end{bmatrix} \\ :) \\ :(\\ :) \\ :(\\ :) \\ :(\end{bmatrix}$$

$$Ans3 = \begin{bmatrix} .1 = \left(\mathrm{Cos}(\alpha) = \frac{\sqrt{55}}{8}\right) & .2 = \left(\mathrm{Sin}(\beta) = -\frac{\sqrt{15}}{4}\right) \\ .3 = (\mathrm{Tan}(\beta) = -\sqrt{15}) & .4 = \left(\mathrm{Sin}(\alpha+\beta) = \frac{3}{32} - \frac{\sqrt{55}\sqrt{15}}{32}\right) \\ .5 = \left(\mathrm{Cos}(\beta-\alpha) = \frac{\sqrt{55}}{32} - \frac{3\sqrt{15}}{32}\right) & .6 = \left(\mathrm{Tan}(\alpha-\beta) = -\frac{3\sqrt{5}\sqrt{11}}{5} - \frac{4\sqrt{5}\sqrt{3}}{5}\right) \\ .7 = \left(\mathrm{Sin}(2\alpha) = \frac{3\sqrt{55}}{32}\right) & .8 = \left(\mathrm{Tan}(2\beta) = \frac{\sqrt{15}}{7}\right) \end{bmatrix}, \quad Ans4 = \begin{bmatrix} .1 = \left(\mathrm{Sin}(\alpha) = \frac{\sqrt{33}}{7}\right) & .2 = \left(\mathrm{Cos}(\beta) = -\frac{\sqrt{3}}{2}\right) \\ .3 = \left(\mathrm{Tan}(\beta) = \frac{\sqrt{3}}{3}\right) & .4 = \left(\mathrm{Sin}(\alpha+\beta) = -\frac{\sqrt{3}\sqrt{33}}{14} + \frac{2}{7}\right) \\ .5 = \left(\mathrm{Cos}(\beta-\alpha) = \frac{2\sqrt{3}}{7} - \frac{\sqrt{33}}{14}\right) & .6 = \left(\mathrm{Tan}(\alpha-\beta) = -\frac{16\sqrt{3}\sqrt{11}}{15} - \frac{49\sqrt{3}}{15}\right) \\ .7 = \left(\mathrm{Sin}(2\alpha) = -\frac{8\sqrt{33}}{49}\right) & .8 = (\mathrm{Tan}(2\beta) = \sqrt{3}) \end{bmatrix}, \begin{bmatrix} :) \\ :(\\ M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \\ :) \\ :(\end{bmatrix}$$

$$Ans5 = (\mathrm{Cos}(43^{o}) = (\mathrm{Sqrt}(0.5350) = 0.731)), \begin{bmatrix} M \\ U \\ T \end{bmatrix}$$

$$Ans6 = (\mathrm{Sin}(11^{o}) = (\mathrm{Sqrt}(0.0365) = 0.191)), \begin{bmatrix} M \\ U \\ T \end{bmatrix}$$

$$Ans1 = \begin{bmatrix} .1 = \left(\text{Cos}\left(\frac{\pi}{12}\right) = \frac{\sqrt{2}}{4} + \frac{\sqrt{2}\sqrt{3}}{4}\right) & .2 = \left(\text{Sin}(105^o) = \frac{\sqrt{2}}{4} + \frac{\sqrt{2}\sqrt{3}}{4}\right) \\ .3 = (\text{Tan}(75^o) = 2 + \sqrt{3}) & .4 = \left(\text{Cos}(195^o) = -\frac{\sqrt{2}}{4} - \frac{\sqrt{2}\sqrt{3}}{4}\right) \\ .5 = \left(\text{Csc}\left(\frac{19\pi}{12}\right) = -\sqrt{2}\sqrt{3} + \sqrt{2}\right) & .6 = \left(\text{Tan}\left(\frac{17\pi}{12}\right) = 2 + \sqrt{3}\right) \\ .7 = (\text{Cot}((\text{-}165)^o) = 2 + \sqrt{3}) & .8 = (\text{Sec}((\text{-}285)^o) = \sqrt{2}\sqrt{3} + \sqrt{2}) \end{bmatrix}, \begin{bmatrix} :) \\ :(\\ M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \\ :) \\ :(\end{bmatrix}$$

$$Ans2 = \begin{bmatrix} .1 = \left(\frac{2\,\text{Tan}\left(\frac{\pi}{8}\right)}{1 - \text{Tan}\left(\frac{\pi}{8}\right)^2} = \left(\text{Tan}\left(\frac{\pi}{4}\right) = \text{Tan}\left(\frac{\pi}{4}\right)\right)\right) & .2 = \left(\text{Cos}(22.5^o)^2 - \text{Sin}(22.5^o)^2 = \left(\text{Cos}(45^o) = \frac{\sqrt{2}}{2}\right)\right) \\ .3 = \left(\frac{\text{Tan}\left(\frac{\pi}{15}\right) + \text{Tan}\left(\frac{11\pi}{60}\right)}{1 - \text{Tan}\left(\frac{\pi}{15}\right)\text{Tan}\left(\frac{11\pi}{60}\right)} = \left(\text{Tan}\left(\frac{\pi}{4}\right) = 1\right)\right) & .4 = \left(2\,\text{Cos}\left(\frac{\pi}{8}\right)^2 - 1 = \left(\text{Cos}\left(\frac{\pi}{4}\right) = \frac{\sqrt{2}}{2}\right)\right) \\ .5 = (\text{Sin}(105^o)\,\text{Cos}(15^o) - \text{Cos}(105^o)\,\text{Sin}(15^o) = (\text{Sin}(90^o) = 1)) & .6 = \left(\text{Sin}\left(\frac{\pi}{18}\right)\text{Cos}\left(\frac{5\pi}{18}\right) + \text{Cos}\left(\frac{\pi}{18}\right)\text{Sin}\left(\frac{5\pi}{18}\right) = \left(\text{Sin}\left(\frac{\pi}{3}\right) = \frac{\sqrt{3}}{2}\right)\right) \\ .7 = \left(\text{Cos}(10^o)\,\text{Cos}(20^o) - \text{Sin}(10^o)\,\text{Sin}(20^o) = \left(\text{Cos}(30^o) = \frac{\sqrt{3}}{2}\right)\right) & .8 = \left(1 - 2\,\text{Sin}\left(\frac{\pi}{12}\right)^2 = \left(\text{Cos}\left(\frac{\pi}{6}\right) = \frac{\sqrt{3}}{2}\right)\right) \\ .9 = \left(2\,\text{Sin}(15^o)\,\text{Cos}(15^o) = \left(\text{Sin}(30^o) = \frac{1}{2}\right)\right) & .10 = \left(\frac{\text{Tan}(80^o) - \text{Tan}(20^o)}{1 + \text{Tan}(80^o)\,\text{Tan}(20^o)} = (\text{Tan}(60^o) = \sqrt{3})\right) \end{bmatrix}, \begin{bmatrix} :) \\ :(\\ :) \\ :(\\ \begin{bmatrix}\begin{bmatrix} M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \end{bmatrix}\end{bmatrix} \\ :) \\ :(\\ :) \\ :(\\ :) \\ :(\end{bmatrix}$$

$$Ans3 = \begin{bmatrix} .1 = \left(\text{Cos}(\alpha) = \frac{2\sqrt{6}}{7}\right) & .2 = \left(\text{Sin}(\beta) = -\frac{2\sqrt{10}}{7}\right) \\ .3 = \left(\text{Tan}(\alpha) = \frac{5\sqrt{6}}{12}\right) & .4 = \left(\text{Sin}(\alpha+\beta) = \frac{15}{49} - \frac{4\sqrt{6}\sqrt{10}}{49}\right) \\ .5 = \left(\text{Cos}(\alpha-\beta) = \frac{6\sqrt{6}}{49} - \frac{10\sqrt{10}}{49}\right) & .6 = \left(\text{Tan}(\beta-\alpha) = \frac{3\sqrt{5}\sqrt{2}}{8} + \frac{5\sqrt{2}\sqrt{3}}{8}\right) \\ .7 = \left(\text{Cos}(2\beta) = \frac{\text{-}31}{49}\right) & .8 = (\text{Tan}(2\alpha) = -20\sqrt{6}) \end{bmatrix}, \quad Ans4 = \begin{bmatrix} .1 = \left(\text{Sin}(\alpha) = \frac{\sqrt{7}}{4}\right) & .2 = \left(\text{Cos}(\beta) = -\frac{3\sqrt{5}}{7}\right) \\ .3 = \left(\text{Tan}(\beta) = \frac{2\sqrt{5}}{15}\right) & .4 = \left(\text{Sin}(\alpha+\beta) = -\frac{3\sqrt{5}\sqrt{7}}{28} + \frac{3}{14}\right) \\ .5 = \left(\text{Cos}(\alpha-\beta) = \frac{9\sqrt{5}}{28} - \frac{\sqrt{7}}{14}\right) & .6 = \left(\text{Tan}(\beta-\alpha) = \frac{96\sqrt{5}}{377} + \frac{147\sqrt{7}}{377}\right) \\ .7 = \left(\text{Cos}(2\alpha) = \frac{1}{8}\right) & .8 = \left(\text{Tan}(2\beta) = \frac{12\sqrt{5}}{41}\right) \end{bmatrix}, \begin{bmatrix} :) \\ :(\\ M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \\ :) \\ :(\end{bmatrix}$$

$$Ans5 = (\text{Cos}(36^o) = (\text{Sqrt}(0.6545) = 0.809)), \begin{bmatrix} M \\ U \\ T \end{bmatrix}$$

$$Ans6 = (\text{Sin}(12^o) = (\text{Sqrt}(0.0430) = 0.208)), \begin{bmatrix} M \\ U \\ T \end{bmatrix}$$

$$Ans1 = \begin{bmatrix} .1 = \left(\mathrm{Cos}\left(\frac{\pi}{12}\right) = \frac{\sqrt{2}}{4} + \frac{\sqrt{2}\sqrt{3}}{4}\right) & .2 = \left(\mathrm{Sin}(75^o) = \frac{\sqrt{2}}{4} + \frac{\sqrt{2}\sqrt{3}}{4}\right) \\ .3 = \left(\mathrm{Tan}\left(\frac{7\pi}{12}\right) = -2 - \sqrt{3}\right) & .4 = \left(\mathrm{Cos}((-105)^o) = \frac{\sqrt{2}}{4} - \frac{\sqrt{2}\sqrt{3}}{4}\right) \\ .5 = \left(\mathrm{Tan}\left(\frac{17\pi}{12}\right) = 2 + \sqrt{3}\right) & .6 = \left(\mathrm{Sin}\left(-\frac{19\pi}{12}\right) = \frac{\sqrt{2}}{4} + \frac{\sqrt{2}\sqrt{3}}{4}\right) \\ .7 = (\mathrm{Csc}(195^o) = -\sqrt{2}\sqrt{3} - \sqrt{2}) & .8 = \left(\mathrm{Sec}\left(-\frac{13\pi}{12}\right) = -\sqrt{2}\sqrt{3} + \sqrt{2}\right) \end{bmatrix}, \begin{bmatrix} :) \\ :(\\ M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \\ :) \\ :(\end{bmatrix}$$

$$Ans2 = \begin{bmatrix} .1 = \left(\left(1 - 2\,\mathrm{Sin}\left(\frac{\pi}{12}\right)\right)^2 = \left(\mathrm{Cos}\left(\frac{\pi}{6}\right) = \frac{\sqrt{3}}{2}\right)\right) & .2 = \left(2\,\mathrm{Sin}\left(\frac{\pi}{8}\right)\mathrm{Cos}\left(\frac{\pi}{8}\right) = \left(\mathrm{Sin}\left(\frac{\pi}{4}\right) = \frac{\sqrt{2}}{2}\right)\right) \\ .3 = \left(\mathrm{Cos}(22.5^o)^2 - \mathrm{Sin}(22.5^o)^2 = \left(\mathrm{Cos}(45^o) = \frac{\sqrt{2}}{2}\right)\right) & .4 = \left(\frac{\mathrm{Tan}\left(\frac{5\pi}{18}\right) + \mathrm{Tan}\left(\frac{\pi}{18}\right)}{1 - \mathrm{Tan}\left(\frac{5\pi}{18}\right)\mathrm{Tan}\left(\frac{\pi}{18}\right)} = \left(\mathrm{Tan}\left(\frac{\pi}{3}\right) = \sqrt{3}\right)\right) \\ .5 = \left(2\,\mathrm{Cos}(15^o)^2 - 1 = \left(\mathrm{Cos}(30^o) = \frac{\sqrt{3}}{2}\right)\right) & .6 = \left(\mathrm{Sin}(60^o)\mathrm{Cos}(15^o) - \mathrm{Cos}(60^o)\mathrm{Sin}(15^o) = \left(\mathrm{Sin}(45^o) = \frac{\sqrt{2}}{2}\right)\right) \\ .7 = \left(\mathrm{Cos}\left(\frac{11\pi}{18}\right)\mathrm{Cos}\left(\frac{\pi}{9}\right) + \mathrm{Sin}\left(\frac{11\pi}{18}\right)\mathrm{Sin}\left(\frac{\pi}{9}\right) = \left(\mathrm{Cos}\left(\frac{\pi}{2}\right) = 0\right)\right) & .8 = \left(\frac{2\,\mathrm{Tan}(22.5^o)}{1 - \mathrm{Tan}(22.5^o)^2} = (\mathrm{Tan}(45^o) = 1)\right) \\ .9 = \left(\frac{\mathrm{Tan}(35^o) - \mathrm{Tan}(5^o)}{1 + \mathrm{Tan}(35^o)\mathrm{Tan}(5^o)} = \left(\mathrm{Tan}(30^o) = \frac{\sqrt{3}}{3}\right)\right) & .10 = \left(\mathrm{Sin}(12^o)\mathrm{Cos}(33^o) + \mathrm{Cos}(12^o)\mathrm{Sin}(33^o) = \left(\mathrm{Sin}(45^o) = \frac{\sqrt{2}}{2}\right)\right) \end{bmatrix}, \begin{bmatrix} :) \\ :(\\ :) \\ :(\\ \left[\left[\begin{matrix} M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \end{matrix}\right]\right] \\ :) \\ :(\\ :) \\ :(\\ :) \\ :(\end{bmatrix}$$

$$Ans3 = \begin{bmatrix} .1 = \left(\mathrm{Sin}(\alpha) = \frac{\sqrt{5}}{3}\right) & .2 = \left(\mathrm{Cos}(\beta) = \frac{3\sqrt{5}}{7}\right) \\ .3 = \left(\mathrm{Tan}(\beta) = -\frac{2\sqrt{5}}{15}\right) & .4 = \left(\mathrm{Sin}(\alpha - \beta) = \frac{19}{21}\right) \\ .5 = \left(\mathrm{Cos}(\alpha + \beta) = \frac{8\sqrt{5}}{21}\right) & .6 = \left(\mathrm{Tan}(\beta - \alpha) = -\frac{19\sqrt{5}}{20}\right) \\ .7 = \left(\mathrm{Cos}(2\beta) = \frac{41}{49}\right) & .8 = (\mathrm{Tan}(2\alpha) = -4\sqrt{5}) \end{bmatrix}, \quad Ans4 = \begin{bmatrix} .1 = \left(\mathrm{Cos}(\alpha) = -\frac{\sqrt{15}}{4}\right) & .2 = \left(\mathrm{Sin}(\beta) = \frac{\sqrt{3}}{2}\right) \\ .3 = (\mathrm{Tan}(\beta) = -\sqrt{3}) & .4 = \left(\mathrm{Sin}(\alpha - \beta) = \frac{1}{8} + \frac{\sqrt{15}\sqrt{3}}{8}\right) \\ .5 = \left(\mathrm{Cos}(\beta - \alpha) = \frac{\sqrt{15}}{8} - \frac{\sqrt{3}}{8}\right) & .6 = \left(\mathrm{Tan}(\alpha + \beta) = \frac{\sqrt{5}\sqrt{3}}{3} - \frac{4\sqrt{3}}{3}\right) \\ .7 = \left(\mathrm{Cos}(2\alpha) = \frac{7}{8}\right) & .8 = (\mathrm{Tan}(2\beta) = \sqrt{3}) \end{bmatrix}, \begin{bmatrix} :) \\ :(\\ M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \\ :) \\ :(\end{bmatrix}$$

$$Ans5 = (\mathrm{Cos}(37^o) = (\mathrm{Sqrt}(0.6380) = 0.799)), \quad \begin{bmatrix} M \\ U \\ T \end{bmatrix}$$

$$Ans6 = (\mathrm{Sin}(20^o) = (\mathrm{Sqrt}(0.1170) = 0.342)), \quad \begin{bmatrix} M \\ U \\ T \end{bmatrix}$$

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$$Ans1 = \begin{bmatrix} .1 = \left(\mathrm{Cos}\left(\frac{7\pi}{12}\right) = \frac{\sqrt{2}}{4} - \frac{\sqrt{2}\sqrt{3}}{4}\right) & .2 = \left(\mathrm{Sin}(75^o) = \frac{\sqrt{2}}{4} + \frac{\sqrt{2}\sqrt{3}}{4}\right) \\ .3 = \left(\mathrm{Tan}\left(\frac{\pi}{12}\right) = 2 - \sqrt{3}\right) & .4 = \left(\mathrm{Tan}\left(-\frac{\pi}{12}\right) = -2 + \sqrt{3}\right) \\ .5 = (\mathrm{Sec}((\text{-}285)^o) = \sqrt{2}\sqrt{3} + \sqrt{2}) & .6 = (\mathrm{Cot}((\text{-}105)^o) = 2 - \sqrt{3}) \\ .7 = \left(\mathrm{Sin}\left(\frac{19\pi}{12}\right) = -\frac{\sqrt{2}}{4} - \frac{\sqrt{2}\sqrt{3}}{4}\right) & .8 = \left(\mathrm{Cos}\left(-\frac{5\pi}{12}\right) = \frac{\sqrt{2}\sqrt{3}}{4} - \frac{\sqrt{2}}{4}\right) \end{bmatrix}, \begin{bmatrix} :) \\ :(\\ M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \\ :) \\ :(\end{bmatrix}$$

$$Ans2 = \begin{bmatrix} .1 = \left(\frac{\mathrm{Tan}(20^o) + \mathrm{Tan}(40^o)}{1 - \mathrm{Tan}(20^o)\,\mathrm{Tan}(40^o)} = (\mathrm{Tan}(60^o) = \sqrt{3})\right) & .2 = \left(\frac{\mathrm{Tan}\left(\frac{5\pi}{18}\right) - \mathrm{Tan}\left(\frac{\pi}{9}\right)}{1 + \mathrm{Tan}\left(\frac{5\pi}{18}\right)\mathrm{Tan}\left(\frac{\pi}{9}\right)} = \left(\mathrm{Tan}\left(\frac{\pi}{6}\right) = \frac{\sqrt{3}}{3}\right)\right) \\ .3 = \left(\frac{2\,\mathrm{Tan}\left(\frac{\pi}{8}\right)}{1 - \mathrm{Tan}\left(\frac{\pi}{8}\right)^2} = \left(\mathrm{Tan}\left(\frac{\pi}{4}\right) = \mathrm{Tan}\left(\frac{\pi}{4}\right)\right)\right) & .4 = \left(1 - 2\,\mathrm{Sin}(22.5^o)^2 = \left(\mathrm{Cos}(45^o) = \frac{\sqrt{2}}{2}\right)\right) \\ .5 = (\mathrm{Cos}(105^o)\,\mathrm{Cos}(15^o) + \mathrm{Sin}(105^o)\,\mathrm{Sin}(15^o) = (\mathrm{Cos}(90^o) = 0)) & .6 = \left(\mathrm{Sin}\left(\frac{13\pi}{36}\right)\mathrm{Cos}\left(\frac{\pi}{9}\right) - \mathrm{Cos}\left(\frac{13\pi}{36}\right)\mathrm{Sin}\left(\frac{\pi}{9}\right) = \left(\mathrm{Sin}\left(\frac{\pi}{4}\right) = \frac{\sqrt{2}}{2}\right)\right) \\ .7 = \left(\mathrm{Cos}(35^o)\,\mathrm{Cos}(10^o) - \mathrm{Sin}(35^o)\,\mathrm{Sin}(10^o) = \left(\mathrm{Cos}(45^o) = \frac{\sqrt{2}}{2}\right)\right) & .8 = \left(\mathrm{Cos}(15^o)^2 - \mathrm{Sin}(15^o)^2 = \left(\mathrm{Cos}(30^o) = \frac{\sqrt{3}}{2}\right)\right) \\ .9 = \left(2\,\mathrm{Sin}\left(\frac{\pi}{12}\right)\mathrm{Cos}\left(\frac{\pi}{12}\right) = \left(\mathrm{Sin}\left(\frac{\pi}{6}\right) = \frac{1}{2}\right)\right) & .10 = \left(2\,\mathrm{Cos}\left(\frac{\pi}{8}\right)^2 - 1 = \left(\mathrm{Cos}\left(\frac{\pi}{4}\right) = \frac{\sqrt{2}}{2}\right)\right) \end{bmatrix}, \begin{bmatrix} :) \\ :(\\ :) \\ :(\\ \left[\left[\begin{matrix} M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \end{matrix}\right]\right] \\ :) \\ :(\\ :) \\ :(\\ :) \\ :(\end{bmatrix}$$

$$Ans3 = \begin{bmatrix} .1 = \left(\mathrm{Sin}(\alpha) = \frac{\sqrt{5}}{3}\right) & .2 = \left(\mathrm{Cos}(\beta) = -\frac{\sqrt{3}}{2}\right) \\ .3 = \left(\mathrm{Tan}(\alpha) = \frac{\sqrt{5}}{2}\right) & .4 = \left(\mathrm{Sin}(\beta - \alpha) = \frac{1}{3} + \frac{\sqrt{5}\sqrt{3}}{6}\right) \\ .5 = \left(\mathrm{Cos}(\alpha - \beta) = -\frac{\sqrt{3}}{3} + \frac{\sqrt{5}}{6}\right) & .6 = \left(\mathrm{Tan}(\alpha + \beta) = \frac{8\sqrt{5}}{7} - \frac{9\sqrt{3}}{7}\right) \\ .7 = \left(\mathrm{Sin}(2\alpha) = \frac{4\sqrt{5}}{9}\right) & .8 = (\mathrm{Tan}(2\beta) = -\sqrt{3}) \end{bmatrix}, \quad Ans4 = \begin{bmatrix} .1 = \left(\mathrm{Sin}(\alpha) = -\frac{\sqrt{3}}{2}\right) & .2 = \left(\mathrm{Cos}(\beta) = -\frac{\sqrt{21}}{5}\right) \\ .3 = (\mathrm{Tan}(\alpha) = -\sqrt{3}) & .4 = \left(\mathrm{Sin}(\alpha + \beta) = \frac{\sqrt{3}\sqrt{21}}{10} - \frac{1}{5}\right) \\ .5 = \left(\mathrm{Cos}(\alpha - \beta) = -\frac{\sqrt{21}}{10} + \frac{\sqrt{3}}{5}\right) & .6 = \left(\mathrm{Tan}(\beta - \alpha) = \frac{8\sqrt{3}\sqrt{7}}{9} + \frac{25\sqrt{3}}{9}\right) \\ .7 = \left(\mathrm{Cos}(2\beta) = \frac{17}{25}\right) & .8 = (\mathrm{Tan}(2\alpha) = \sqrt{3}) \end{bmatrix}, \begin{bmatrix} :) \\ :(\\ M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \\ :) \\ :(\end{bmatrix}$$

$$Ans5 = (\mathrm{Sin}(35^o) = (\mathrm{Sqrt}(0.3290) = 0.574)), \quad \begin{bmatrix} M \\ U \\ T \end{bmatrix}$$

$$Ans6 = (\mathrm{Cos}(3^o) = (\mathrm{Sqrt}(0.9975) = 0.999)), \quad \begin{bmatrix} M \\ U \\ T \end{bmatrix}$$

TrigonometryExercise4 Answers for No.13490

$$Ans1 = \begin{bmatrix} .1 = \left(\text{Sin}(105^o) = \frac{\sqrt{2}}{4} + \frac{\sqrt{2}\sqrt{3}}{4}\right) & .2 = \left(\text{Cos}\left(\frac{5\pi}{12}\right) = \frac{\sqrt{2}\sqrt{3}}{4} - \frac{\sqrt{2}}{4}\right) \\ .3 = \left(\text{Tan}\left(\frac{\pi}{12}\right) = 2 - \sqrt{3}\right) & .4 = (\text{Tan}(255^o) = 2 + \sqrt{3}) \\ .5 = \left(\text{Sec}\left(\frac{23\pi}{12}\right) = \sqrt{2}\sqrt{3} - \sqrt{2}\right) & .6 = \left(\text{Sin}(285^o) = -\frac{\sqrt{2}}{4} - \frac{\sqrt{2}\sqrt{3}}{4}\right) \\ .7 = \left(\text{Csc}\left(-\frac{17\pi}{12}\right) = \sqrt{2}\sqrt{3} - \sqrt{2}\right) & .8 = \left(\text{Cot}\left(-\frac{11\pi}{12}\right) = 2 + \sqrt{3}\right) \end{bmatrix}, \begin{bmatrix} :) \\ :(\\ M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \\ :) \\ :(\end{bmatrix}$$

$$Ans2 = \begin{bmatrix} .1 = \left(\text{Cos}\left(\frac{\pi}{18}\right)\text{Cos}\left(\frac{4\pi}{9}\right) - \text{Sin}\left(\frac{\pi}{18}\right)\text{Sin}\left(\frac{4\pi}{9}\right) = \left(\text{Cos}\left(\frac{\pi}{2}\right) = 0\right)\right) & .2 = \left(1 - 2\,\text{Sin}(15^o)^2 = \left(\text{Cos}(30^o) = \frac{\sqrt{3}}{2}\right)\right) \\ .3 = \left(\frac{2\,\text{Tan}\left(\frac{\pi}{12}\right)}{1 - \text{Tan}\left(\frac{\pi}{12}\right)^2} = \left(\text{Tan}\left(\frac{\pi}{6}\right) = \text{Tan}\left(\frac{\pi}{6}\right)\right)\right) & .4 = \left(2\,\text{Cos}\left(\frac{\pi}{12}\right)^2 - 1 = \left(\text{Cos}\left(\frac{\pi}{6}\right) = \frac{\sqrt{3}}{2}\right)\right) \\ .5 = \left(\frac{\text{Tan}(10^o) + \text{Tan}(20^o)}{1 - \text{Tan}(10^o)\,\text{Tan}(20^o)} = \left(\text{Tan}(30^o) = \frac{\sqrt{3}}{3}\right)\right) & .6 = \left(\text{Cos}(22.5^o)^2 - \text{Sin}(22.5^o)^2 = \left(\text{Cos}(45^o) = \frac{\sqrt{2}}{2}\right)\right) \\ .7 = \left(\frac{\text{Tan}\left(\frac{4\pi}{9}\right) - \text{Tan}\left(\frac{\pi}{9}\right)}{1 + \text{Tan}\left(\frac{4\pi}{9}\right)\text{Tan}\left(\frac{\pi}{9}\right)} = \left(\text{Tan}\left(\frac{\pi}{3}\right) = \sqrt{3}\right)\right) & .8 = \left(\text{Sin}(25^o)\,\text{Cos}(20^o) + \text{Cos}(25^o)\,\text{Sin}(20^o) = \left(\text{Sin}(45^o) = \frac{\sqrt{2}}{2}\right)\right) \\ .9 = \left(2\,\text{Sin}\left(\frac{\pi}{8}\right)\text{Cos}\left(\frac{\pi}{8}\right) = \left(\text{Sin}\left(\frac{\pi}{4}\right) = \frac{\sqrt{2}}{2}\right)\right) & .10 = \left(\text{Sin}\left(\frac{11\pi}{36}\right)\text{Cos}\left(\frac{\pi}{18}\right) - \text{Cos}\left(\frac{11\pi}{36}\right)\text{Sin}\left(\frac{\pi}{18}\right) = \left(\text{Sin}\left(\frac{\pi}{4}\right) = \frac{\sqrt{2}}{2}\right)\right) \end{bmatrix}, \begin{bmatrix} :) \\ :(\\ :) \\ :(\\ [[M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T]] \\ :) \\ :(\\ :) \\ :(\\ :) \\ :(\end{bmatrix}$$

$$Ans3 = \begin{bmatrix} .1 = \left(\text{Sin}(\alpha) = \frac{2\sqrt{6}}{5}\right) & .2 = \left(\text{Cos}(\beta) = \frac{\sqrt{55}}{8}\right) \\ .3 = \left(\text{Tan}(\beta) = -\frac{3\sqrt{55}}{55}\right) & .4 = \left(\text{Sin}(\alpha+\beta) = \frac{\sqrt{6}\sqrt{55}}{20} - \frac{3}{40}\right) \\ .5 = \left(\text{Cos}(\beta-\alpha) = \frac{\sqrt{55}}{40} - \frac{3\sqrt{6}}{20}\right) & .6 = \left(\text{Tan}(\alpha-\beta) = -\frac{128\sqrt{6}}{161} - \frac{75\sqrt{55}}{161}\right) \\ .7 = \left(\text{Sin}(2\beta) = -\frac{3\sqrt{55}}{32}\right) & .8 = \left(\text{Tan}(2\alpha) = -\frac{4\sqrt{6}}{23}\right) \end{bmatrix}, \quad Ans4 = \begin{bmatrix} .1 = \left(\text{Cos}(\alpha) = -\frac{2\sqrt{6}}{7}\right) & .2 = \left(\text{Sin}(\beta) = \frac{2\sqrt{2}}{3}\right) \\ .3 = (\text{Tan}(\beta) = -2\sqrt{2}) & .4 = \left(\text{Sin}(\beta-\alpha) = -\frac{5}{21} - \frac{4\sqrt{6}\sqrt{2}}{21}\right) \\ .5 = \left(\text{Cos}(\alpha+\beta) = \frac{2\sqrt{6}}{21} + \frac{10\sqrt{2}}{21}\right) & .6 = \left(\text{Tan}(\alpha-\beta) = -\frac{45\sqrt{2}\sqrt{3}}{88} - \frac{49\sqrt{2}}{88}\right) \\ .7 = \left(\text{Sin}(2\beta) = -\frac{4\sqrt{2}}{9}\right) & .8 = (\text{Tan}(2\alpha) = -20\sqrt{6}) \end{bmatrix}, \begin{bmatrix} :) \\ :(\\ M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \\ :) \\ :(\end{bmatrix}$$

$$Ans5 = (\text{Sin}(24^o) = (\text{Sqrt}(0.1655) = 0.407)), \quad \begin{bmatrix} M \\ U \\ T \end{bmatrix}$$

$$Ans6 = (\text{Cos}(10^o) = (\text{Sqrt}(0.9700) = 0.985)), \quad \begin{bmatrix} M \\ U \\ T \end{bmatrix}$$

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$$Ans1 = \begin{bmatrix} .1 = \left(\mathrm{Sin}\left(\frac{7\pi}{12}\right) = \frac{\sqrt{2}}{4} + \frac{\sqrt{2}\sqrt{3}}{4}\right) & .2 = \left(\mathrm{Cos}(75^o) = \frac{\sqrt{2}\sqrt{3}}{4} - \frac{\sqrt{2}}{4}\right) \\ .3 = (\mathrm{Tan}(15^o) = 2 - \sqrt{3}) & .4 = \left(\mathrm{Cos}\left(\frac{19\pi}{12}\right) = \frac{\sqrt{2}\sqrt{3}}{4} - \frac{\sqrt{2}}{4}\right) \\ .5 = (\mathrm{Tan}(255^o) = 2 + \sqrt{3}) & .6 = \left(\mathrm{Sec}\left(-\frac{13\pi}{12}\right) = -\sqrt{2}\sqrt{3} + \sqrt{2}\right) \\ .7 = \left(\mathrm{Sin}(165^o) = \frac{\sqrt{2}\sqrt{3}}{4} - \frac{\sqrt{2}}{4}\right) & .8 = (\mathrm{Cot}(195^o) = 2 + \sqrt{3}) \end{bmatrix}, \ , \begin{bmatrix} :) \\ :(\\ M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \\ :) \\ :(\end{bmatrix}$$

$$Ans2 = \begin{bmatrix} .1 = \left(\frac{2\,\mathrm{Tan}\left(\frac{\pi}{12}\right)}{1 - \mathrm{Tan}\left(\frac{\pi}{12}\right)^2} = \left(\mathrm{Tan}\left(\frac{\pi}{6}\right) = \mathrm{Tan}\left(\frac{\pi}{6}\right)\right)\right) & .2 = \left(\mathrm{Cos}\left(\frac{\pi}{12}\right)^2 - \mathrm{Sin}\left(\frac{\pi}{12}\right)^2 = \left(\mathrm{Cos}\left(\frac{\pi}{6}\right) = \frac{\sqrt{3}}{2}\right)\right) \\ .3 = \left(\mathrm{Sin}(25^o)\,\mathrm{Cos}(20^o) + \mathrm{Cos}(25^o)\,\mathrm{Sin}(20^o) = \left(\mathrm{Sin}(45^o) = \frac{\sqrt{2}}{2}\right)\right) & .4 = \left(\frac{\mathrm{Tan}(10^o) + \mathrm{Tan}(20^o)}{1 - \mathrm{Tan}(10^o)\,\mathrm{Tan}(20^o)} = \left(\mathrm{Tan}(30^o) = \frac{\sqrt{3}}{3}\right)\right) \\ .5 = \left(2\,\mathrm{Cos}(15^o)^2 - 1 = \left(\mathrm{Cos}(30^o) = \frac{\sqrt{3}}{2}\right)\right) & .6 = \left(\mathrm{Cos}\left(\frac{5\pi}{12}\right)\mathrm{Cos}\left(\frac{\pi}{12}\right) - \mathrm{Sin}\left(\frac{5\pi}{12}\right)\mathrm{Sin}\left(\frac{\pi}{12}\right) = \left(\mathrm{Cos}\left(\frac{\pi}{2}\right) = 0\right)\right) \\ .7 = \left(2\,\mathrm{Sin}(22.5^o)\,\mathrm{Cos}(22.5^o) = \left(\mathrm{Sin}(45^o) = \frac{\sqrt{2}}{2}\right)\right) & .8 = \left(\frac{\mathrm{Tan}(50^o) - \mathrm{Tan}(20^o)}{1 + \mathrm{Tan}(50^o)\,\mathrm{Tan}(20^o)} = \left(\mathrm{Tan}(30^o) = \frac{\sqrt{3}}{3}\right)\right) \\ .9 = \left(\mathrm{Cos}\left(\frac{13\pi}{36}\right)\mathrm{Cos}\left(\frac{\pi}{9}\right) + \mathrm{Sin}\left(\frac{13\pi}{36}\right)\mathrm{Sin}\left(\frac{\pi}{9}\right) = \left(\mathrm{Cos}\left(\frac{\pi}{4}\right) = \frac{\sqrt{2}}{2}\right)\right) & .10 = \left(1 - 2\,\mathrm{Sin}\left(\frac{\pi}{8}\right)^2 = \left(\mathrm{Cos}\left(\frac{\pi}{4}\right) = \frac{\sqrt{2}}{2}\right)\right) \end{bmatrix}, \ , \begin{bmatrix} :) \\ :(\\ :) \\ :(\\ \begin{bmatrix}\begin{bmatrix} M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \end{bmatrix}\end{bmatrix} \\ :) \\ :(\\ :) \\ :(\\ :) \\ :(\end{bmatrix}$$

$$Ans3 = \begin{bmatrix} .1 = \left(\mathrm{Cos}(\alpha) = \frac{\sqrt{55}}{8}\right) & .2 = \left(\mathrm{Sin}(\beta) = \frac{3\sqrt{5}}{7}\right) \\ .3 = \left(\mathrm{Tan}(\alpha) = \frac{3\sqrt{55}}{55}\right) & .4 = \left(\mathrm{Sin}(\beta - \alpha) = \frac{3\sqrt{55}\sqrt{5}}{56} + \frac{3}{28}\right) \\ .5 = \left(\mathrm{Cos}(\alpha - \beta) = -\frac{\sqrt{55}}{28} + \frac{9\sqrt{5}}{56}\right) & .6 = \left(\mathrm{Tan}(\alpha + \beta) = -\frac{147\sqrt{5}\sqrt{11}}{185} + \frac{384\sqrt{5}}{185}\right) \\ .7 = \left(\mathrm{Sin}(2\alpha) = \frac{3\sqrt{55}}{32}\right) & .8 = \left(\mathrm{Tan}(2\beta) = \frac{12\sqrt{5}}{41}\right) \end{bmatrix}, \ , \ Ans4 = \begin{bmatrix} .1 = \left(\mathrm{Cos}(\alpha) = -\frac{2\sqrt{2}}{3}\right) & .2 = \left(\mathrm{Sin}(\beta) = -\frac{\sqrt{11}}{6}\right) \\ .3 = \left(\mathrm{Tan}(\alpha) = \frac{\sqrt{2}}{4}\right) & .4 = \left(\mathrm{Sin}(\alpha - \beta) = -\frac{5}{18} - \frac{\sqrt{2}\sqrt{11}}{9}\right) \\ .5 = \left(\mathrm{Cos}(\alpha + \beta) = -\frac{5\sqrt{2}}{9} - \frac{\sqrt{11}}{18}\right) & .6 = \left(\mathrm{Tan}(\beta - \alpha) = -\frac{5\sqrt{11}}{21} - \frac{8\sqrt{2}}{21}\right) \\ .7 = \left(\mathrm{Cos}(2\beta) = \frac{7}{18}\right) & .8 = \left(\mathrm{Tan}(2\alpha) = \frac{4\sqrt{2}}{7}\right) \end{bmatrix}, \ , \begin{bmatrix} :) \\ :(\\ M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \\ :) \\ :(\end{bmatrix}$$

$$Ans5 = (\mathrm{Cos}(42^o) = (\mathrm{Sqrt}(0.5525) = 0.743)), \ , \begin{bmatrix} M \\ U \\ T \end{bmatrix}$$

$$Ans6 = (\mathrm{Sin}(6^o) = (\mathrm{Sqrt}(0.0110) = 0.105)), \ , \begin{bmatrix} M \\ U \\ T \end{bmatrix}$$

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$$Ans1 = \begin{bmatrix} .1 = \left(\mathrm{Sin}\left(\frac{\pi}{12}\right) = \frac{\sqrt{2}\sqrt{3}}{4} - \frac{\sqrt{2}}{4}\right) & .2 = \left(\mathrm{Cos}(105^o) = \frac{\sqrt{2}}{4} - \frac{\sqrt{2}\sqrt{3}}{4}\right) \\ .3 = \left(\mathrm{Tan}\left(\frac{5\pi}{12}\right) = 2+\sqrt{3}\right) & .4 = (\mathrm{Sec}((-105)^o) = -\sqrt{2}\sqrt{3} - \sqrt{2}) \\ .5 = \left(\mathrm{Cos}\left(\frac{19\pi}{12}\right) = \frac{\sqrt{2}\sqrt{3}}{4} - \frac{\sqrt{2}}{4}\right) & .6 = \left(\mathrm{Tan}\left(-\frac{19\pi}{12}\right) = 2+\sqrt{3}\right) \\ .7 = (\mathrm{Csc}((-345)^o) = \sqrt{2}\sqrt{3}+\sqrt{2}) & .8 = (\mathrm{Cot}((-15)^o) = -2-\sqrt{3}) \end{bmatrix}, \begin{bmatrix} :) \\ :(\\ M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \\ :) \\ :(\end{bmatrix}$$

$$Ans2 = \begin{bmatrix} .1 = \left(\frac{\mathrm{Tan}\left(\frac{5\pi}{36}\right)+\mathrm{Tan}\left(\frac{7\pi}{36}\right)}{1-\mathrm{Tan}\left(\frac{5\pi}{36}\right)\mathrm{Tan}\left(\frac{7\pi}{36}\right)} = \left(\mathrm{Tan}\left(\frac{\pi}{3}\right) = \sqrt{3}\right)\right) & .2 = \left(\mathrm{Sin}(35^o)\,\mathrm{Cos}(5^o) - \mathrm{Cos}(35^o)\,\mathrm{Sin}(5^o) = \left(\mathrm{Sin}(30^o) = \frac{1}{2}\right)\right) \\ .3 = \left(\mathrm{Sin}(5^o)\,\mathrm{Cos}(25^o) + \mathrm{Cos}(5^o)\,\mathrm{Sin}(25^o) = \left(\mathrm{Sin}(30^o) = \frac{1}{2}\right)\right) & .4 = \left(\frac{\mathrm{Tan}(57^o)-\mathrm{Tan}(12^o)}{1+\mathrm{Tan}(57^o)\,\mathrm{Tan}(12^o)} = (\mathrm{Tan}(45^o) = 1)\right) \\ .5 = \left(\mathrm{Cos}(22.5^o)^2 - \mathrm{Sin}(22.5^o)^2 = \left(\mathrm{Cos}(45^o) = \frac{\sqrt{2}}{2}\right)\right) & .6 = \left(\mathrm{Cos}\left(\frac{\pi}{9}\right)\mathrm{Cos}\left(\frac{7\pi}{18}\right) - \mathrm{Sin}\left(\frac{\pi}{9}\right)\mathrm{Sin}\left(\frac{7\pi}{18}\right) = \left(\mathrm{Cos}\left(\frac{\pi}{2}\right) = 0\right)\right) \\ .7 = \left(\frac{2\,\mathrm{Tan}(15^o)}{1-\mathrm{Tan}(15^o)^2} = \left(\mathrm{Tan}(30^o) = \frac{\sqrt{3}}{3}\right)\right) & .8 = \left(2\,\mathrm{Sin}\left(\frac{\pi}{12}\right)\mathrm{Cos}\left(\frac{\pi}{12}\right) = \left(\mathrm{Sin}\left(\frac{\pi}{6}\right) = \frac{1}{2}\right)\right) \\ .9 = \left(2\,\mathrm{Cos}\left(\frac{\pi}{8}\right)^2 - 1 = \left(\mathrm{Cos}\left(\frac{\pi}{4}\right) = \frac{\sqrt{2}}{2}\right)\right) & .10 = \left(1 - 2\,\mathrm{Sin}(15^o)^2 = \left(\mathrm{Cos}(30^o) = \frac{\sqrt{3}}{2}\right)\right) \end{bmatrix}, \begin{bmatrix} :) \\ :(\\ :) \\ :(\\ \left[\left[\begin{matrix} M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \end{matrix}\right]\right] \\ :) \\ :(\\ :) \\ :(\\ :) \\ :(\end{bmatrix}$$

$$Ans3 = \begin{bmatrix} .1 = \left(\mathrm{Cos}(\alpha) = \frac{\sqrt{11}}{6}\right) & .2 = \left(\mathrm{Sin}(\beta) = \frac{2\sqrt{10}}{7}\right) \\ .3 = \left(\mathrm{Tan}(\alpha) = \frac{5\sqrt{11}}{11}\right) & .4 = \left(\mathrm{Sin}(\alpha+\beta) = -\frac{5}{14} + \frac{\sqrt{11}\sqrt{10}}{21}\right) \\ .5 = \left(\mathrm{Cos}(\alpha-\beta) = -\frac{\sqrt{11}}{14} + \frac{5\sqrt{10}}{21}\right) & .6 = \left(\mathrm{Tan}(\beta-\alpha) = \frac{216\sqrt{10}}{901} + \frac{245\sqrt{11}}{901}\right) \\ .7 = \left(\mathrm{Sin}(2\alpha) = \frac{5\sqrt{11}}{18}\right) & .8 = \left(\mathrm{Tan}(2\beta) = \frac{12\sqrt{10}}{31}\right) \end{bmatrix}, \quad Ans4 = \begin{bmatrix} .1 = \left(\mathrm{Sin}(\alpha) = -\frac{\sqrt{11}}{6}\right) & .2 = \left(\mathrm{Cos}(\beta) = -\frac{2\sqrt{6}}{5}\right) \\ .3 = \left(\mathrm{Tan}(\alpha) = -\frac{\sqrt{11}}{5}\right) & .4 = \left(\mathrm{Sin}(\alpha+\beta) = \frac{\sqrt{11}\sqrt{6}}{15} - \frac{1}{6}\right) \\ .5 = \left(\mathrm{Cos}(\beta-\alpha) = -\frac{\sqrt{6}}{3} + \frac{\sqrt{11}}{30}\right) & .6 = \left(\mathrm{Tan}(\alpha-\beta) = -\frac{125\sqrt{11}}{589} - \frac{72\sqrt{6}}{589}\right) \\ .7 = \left(\mathrm{Sin}(2\beta) = \frac{4\sqrt{6}}{25}\right) & .8 = \left(\mathrm{Tan}(2\alpha) = -\frac{5\sqrt{11}}{7}\right) \end{bmatrix}, \begin{bmatrix} :) \\ :(\\ M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \\ :) \\ :(\end{bmatrix}$$

$$Ans5 = (\mathrm{Sin}(17^o) = (\mathrm{Sqrt}(0.0855) = 0.292)), \begin{bmatrix} M \\ U \\ T \end{bmatrix}$$

$$Ans6 = (\mathrm{Cos}(7^o) = (\mathrm{Sqrt}(0.9850) = 0.993)), \begin{bmatrix} M \\ U \\ T \end{bmatrix}$$

$$Ans1 = \begin{bmatrix} .1 = \left(\mathrm{Cos}\left(\frac{\pi}{12}\right) = \frac{\sqrt{2}}{4} + \frac{\sqrt{2}\sqrt{3}}{4}\right) & .2 = \left(\mathrm{Sin}(75^o) = \frac{\sqrt{2}}{4} + \frac{\sqrt{2}\sqrt{3}}{4}\right) \\ .3 = (\mathrm{Tan}(105^o) = -2 - \sqrt{3}) & .4 = (\mathrm{Sec}(195^o) = -\sqrt{2}\sqrt{3} + \sqrt{2}) \\ .5 = \left(\mathrm{Tan}\left(-\frac{19\pi}{12}\right) = 2 + \sqrt{3}\right) & .6 = \left(\mathrm{Cos}\left(-\frac{23\pi}{12}\right) = \frac{\sqrt{2}}{4} + \frac{\sqrt{2}\sqrt{3}}{4}\right) \\ .7 = \left(\mathrm{Sin}(255^o) = -\frac{\sqrt{2}}{4} - \frac{\sqrt{2}\sqrt{3}}{4}\right) & .8 = \left(\mathrm{Csc}\left(\frac{11\pi}{12}\right) = \sqrt{2}\sqrt{3} + \sqrt{2}\right) \end{bmatrix}, \quad , \begin{bmatrix} :) \\ :(\\ M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \\ :) \\ :(\end{bmatrix}$$

$$Ans2 = \begin{bmatrix} .1 = \left(\frac{\mathrm{Tan}\left(\frac{13\pi}{36}\right) - \mathrm{Tan}\left(\frac{\pi}{9}\right)}{1 + \mathrm{Tan}\left(\frac{13\pi}{36}\right)\mathrm{Tan}\left(\frac{\pi}{9}\right)} = \left(\mathrm{Tan}\left(\frac{\pi}{4}\right) = 1\right)\right) & .2 = \left(2\,\mathrm{Cos}\left(\frac{\pi}{8}\right)^2 - 1 = \left(\mathrm{Cos}\left(\frac{\pi}{4}\right) = \frac{\sqrt{2}}{2}\right)\right) \\ .3 = \left(\mathrm{Sin}\left(\frac{\pi}{15}\right)\mathrm{Cos}\left(\frac{13\pi}{30}\right) + \mathrm{Cos}\left(\frac{\pi}{15}\right)\mathrm{Sin}\left(\frac{13\pi}{30}\right) = \left(\mathrm{Sin}\left(\frac{\pi}{2}\right) = 1\right)\right) & .4 = \left(\frac{2\,\mathrm{Tan}\left(\frac{\pi}{12}\right)}{1 - \mathrm{Tan}\left(\frac{\pi}{12}\right)^2} = \left(\mathrm{Tan}\left(\frac{\pi}{6}\right) = \mathrm{Tan}\left(\frac{\pi}{6}\right)\right)\right) \\ .5 = \left(2\,\mathrm{Sin}(22.5^o)\,\mathrm{Cos}(22.5^o) = \left(\mathrm{Sin}(45^o) = \frac{\sqrt{2}}{2}\right)\right) & .6 = \left(\frac{\mathrm{Tan}(18^o) + \mathrm{Tan}(12^o)}{1 - \mathrm{Tan}(18^o)\,\mathrm{Tan}(12^o)} = \left(\mathrm{Tan}(30^o) = \frac{\sqrt{3}}{3}\right)\right) \\ .7 = \left(\mathrm{Sin}\left(\frac{7\pi}{18}\right)\mathrm{Cos}\left(\frac{\pi}{18}\right) - \mathrm{Cos}\left(\frac{7\pi}{18}\right)\mathrm{Sin}\left(\frac{\pi}{18}\right) = \left(\mathrm{Sin}\left(\frac{\pi}{3}\right) = \frac{\sqrt{3}}{2}\right)\right) & .8 = \left(1 - 2\,\mathrm{Sin}\left(\frac{\pi}{12}\right)^2 = \left(\mathrm{Cos}\left(\frac{\pi}{6}\right) = \frac{\sqrt{3}}{2}\right)\right) \\ .9 = \left(\mathrm{Cos}(15^o)^2 - \mathrm{Sin}(15^o)^2 = \left(\mathrm{Cos}(30^o) = \frac{\sqrt{3}}{2}\right)\right) & .10 = \left(\mathrm{Cos}(12^o)\,\mathrm{Cos}(48^o) - \mathrm{Sin}(12^o)\,\mathrm{Sin}(48^o) = \left(\mathrm{Cos}(60^o) = \frac{1}{2}\right)\right) \end{bmatrix}, \quad , \begin{bmatrix} :) \\ :(\\ :) \\ :(\\ \begin{bmatrix}\begin{bmatrix} M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \end{bmatrix}\end{bmatrix} \\ :) \\ :(\\ :) \\ :(\\ :) \\ :(\end{bmatrix}$$

$$Ans3 = \begin{bmatrix} .1 = \left(\mathrm{Cos}(\alpha) = \frac{2\sqrt{2}}{3}\right) & .2 = \left(\mathrm{Sin}(\beta) = -\frac{2\sqrt{6}}{7}\right) \\ .3 = \left(\mathrm{Tan}(\beta) = -\frac{2\sqrt{6}}{5}\right) & .4 = \left(\mathrm{Sin}(\alpha - \beta) = \frac{4\sqrt{6}\sqrt{2}}{21} + \frac{5}{21}\right) \\ .5 = \left(\mathrm{Cos}(\beta - \alpha) = \frac{10\sqrt{2}}{21} - \frac{2\sqrt{6}}{21}\right) & .6 = \left(\mathrm{Tan}(\alpha + \beta) = \frac{49\sqrt{2}}{88} - \frac{45\sqrt{2}\sqrt{3}}{88}\right) \\ .7 = \left(\mathrm{Sin}(2\alpha) = \frac{4\sqrt{2}}{9}\right) & .8 = (\mathrm{Tan}(2\beta) = -20\sqrt{6}) \end{bmatrix}, \quad Ans4 = \begin{bmatrix} .1 = \left(\mathrm{Sin}(\alpha) = -\frac{\sqrt{35}}{6}\right) & .2 = \left(\mathrm{Cos}(\beta) = -\frac{2\sqrt{2}}{3}\right) \\ .3 = \left(\mathrm{Tan}(\beta) = -\frac{\sqrt{2}}{4}\right) & .4 = \left(\mathrm{Sin}(\alpha - \beta) = \frac{1}{18} + \frac{\sqrt{2}\sqrt{35}}{9}\right) \\ .5 = \left(\mathrm{Cos}(\alpha + \beta) = \frac{\sqrt{2}}{9} + \frac{\sqrt{35}}{18}\right) & .6 = \left(\mathrm{Tan}(\beta - \alpha) = \frac{8\sqrt{2}}{3} + \frac{\sqrt{35}}{3}\right) \\ .7 = \left(\mathrm{Cos}(2\alpha) = \frac{-17}{18}\right) & .8 = \left(\mathrm{Tan}(2\beta) = -\frac{4\sqrt{2}}{7}\right) \end{bmatrix}, \quad , \begin{bmatrix} :) \\ :(\\ M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \\ :) \\ :(\end{bmatrix}$$

$$Ans5 = (\mathrm{Cos}(21^o) = (\mathrm{Sqrt}(0.8715) = 0.934)), \quad , \begin{bmatrix} M \\ U \\ T \end{bmatrix}$$

$$Ans6 = (\mathrm{Sin}(35^o) = (\mathrm{Sqrt}(0.3290) = 0.574)), \quad , \begin{bmatrix} M \\ U \\ T \end{bmatrix}$$

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$$Ans1 = \begin{bmatrix} .1 = \left(\mathrm{Sin}\left(\frac{5\pi}{12}\right) = \frac{\sqrt{2}}{4} + \frac{\sqrt{2}\sqrt{3}}{4}\right) & .2 = \left(\mathrm{Cos}(105^o) = \frac{\sqrt{2}}{4} - \frac{\sqrt{2}\sqrt{3}}{4}\right) \\ .3 = \left(\mathrm{Tan}\left(\frac{\pi}{12}\right) = 2 - \sqrt{3}\right) & .4 = \left(\mathrm{Cot}\left(-\frac{23\pi}{12}\right) = 2 + \sqrt{3}\right) \\ .5 = (\mathrm{Sec}(345^o) = \sqrt{2}\sqrt{3} - \sqrt{2}) & .6 = \left(\mathrm{Cos}\left(-\frac{7\pi}{12}\right) = \frac{\sqrt{2}}{4} - \frac{\sqrt{2}\sqrt{3}}{4}\right) \\ .7 = (\mathrm{Csc}((-75)^o) = -\sqrt{2}\sqrt{3} + \sqrt{2}) & .8 = (\mathrm{Tan}(195^o) = 2 - \sqrt{3}) \end{bmatrix}, \begin{bmatrix} :) \\ :(\\ M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \\ :) \\ :(\end{bmatrix}$$

$$Ans2 = \begin{bmatrix} .1 = \left(\mathrm{Cos}(40^o)\,\mathrm{Cos}(10^o) + \mathrm{Sin}(40^o)\,\mathrm{Sin}(10^o) = \left(\mathrm{Cos}(30^o) = \frac{\sqrt{3}}{2}\right)\right) & .2 = \left(\mathrm{Sin}\left(\frac{\pi}{15}\right)\mathrm{Cos}\left(\frac{\pi}{10}\right) + \mathrm{Cos}\left(\frac{\pi}{15}\right)\mathrm{Sin}\left(\frac{\pi}{10}\right) = \left(\mathrm{Sin}\left(\frac{\pi}{6}\right) = \frac{1}{2}\right)\right) \\ .3 = \left(2\,\mathrm{Sin}\left(\frac{\pi}{12}\right)\mathrm{Cos}\left(\frac{\pi}{12}\right) = \left(\mathrm{Sin}\left(\frac{\pi}{6}\right) = \frac{1}{2}\right)\right) & .4 = \left(\frac{2\,\mathrm{Tan}\left(\frac{\pi}{8}\right)}{1 - \mathrm{Tan}\left(\frac{\pi}{8}\right)^2} = \left(\mathrm{Tan}\left(\frac{\pi}{4}\right) = \mathrm{Tan}\left(\frac{\pi}{4}\right)\right)\right) \\ .5 = \left(\frac{\mathrm{Tan}\left(\frac{11\pi}{36}\right) - \mathrm{Tan}\left(\frac{\pi}{18}\right)}{1 + \mathrm{Tan}\left(\frac{11\pi}{36}\right)\mathrm{Tan}\left(\frac{\pi}{18}\right)} = \left(\mathrm{Tan}\left(\frac{\pi}{4}\right) = 1\right)\right) & .6 = \left(1 - 2\,\mathrm{Sin}\left(\frac{\pi}{8}\right)^2 = \left(\mathrm{Cos}\left(\frac{\pi}{4}\right) = \frac{\sqrt{2}}{2}\right)\right) \\ .7 = \left(\frac{\mathrm{Tan}\left(\frac{4\pi}{15}\right) + \mathrm{Tan}\left(\frac{\pi}{15}\right)}{1 - \mathrm{Tan}\left(\frac{4\pi}{15}\right)\mathrm{Tan}\left(\frac{\pi}{15}\right)} = \left(\mathrm{Tan}\left(\frac{\pi}{3}\right) = \sqrt{3}\right)\right) & .8 = \left(2\,\mathrm{Cos}(15^o)^2 - 1 = \left(\mathrm{Cos}(30^o) = \frac{\sqrt{3}}{2}\right)\right) \\ .9 = \left(\mathrm{Cos}(22.5^o)^2 - \mathrm{Sin}(22.5^o)^2 = \left(\mathrm{Cos}(45^o) = \frac{\sqrt{2}}{2}\right)\right) & .10 = \left(\mathrm{Sin}(80^o)\,\mathrm{Cos}(20^o) - \mathrm{Cos}(80^o)\,\mathrm{Sin}(20^o) = \left(\mathrm{Sin}(60^o) = \frac{\sqrt{3}}{2}\right)\right) \end{bmatrix}, \begin{bmatrix} :) \\ :(\\ :) \\ :(\\ \left[\left[\begin{matrix} M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \end{matrix}\right]\right] \\ :) \\ :(\\ :) \\ :(\\ :) \\ :(\end{bmatrix}$$

$$Ans3 = \begin{bmatrix} .1 = \left(\mathrm{Sin}(\alpha) = \frac{2\sqrt{2}}{3}\right) & .2 = \left(\mathrm{Cos}(\beta) = -\frac{\sqrt{3}}{2}\right) \\ .3 = \left(\mathrm{Tan}(\beta) = -\frac{\sqrt{3}}{3}\right) & .4 = \left(\mathrm{Sin}(\beta - \alpha) = \frac{1}{6} + \frac{\sqrt{2}\sqrt{3}}{3}\right) \\ .5 = \left(\mathrm{Cos}(\alpha + \beta) = -\frac{\sqrt{3}}{6} - \frac{\sqrt{2}}{3}\right) & .6 = \left(\mathrm{Tan}(\alpha - \beta) = -\frac{9\sqrt{3}}{5} - \frac{8\sqrt{2}}{5}\right) \\ .7 = \left(\mathrm{Sin}(2\alpha) = \frac{4\sqrt{2}}{9}\right) & .8 = (\mathrm{Tan}(2\beta) = -\sqrt{3}) \end{bmatrix}, \quad Ans4 = \begin{bmatrix} .1 = \left(\mathrm{Sin}(\alpha) = -\frac{\sqrt{5}}{3}\right) & .2 = \left(\mathrm{Cos}(\beta) = \frac{2\sqrt{14}}{9}\right) \\ .3 = \left(\mathrm{Tan}(\beta) = -\frac{5\sqrt{14}}{28}\right) & .4 = \left(\mathrm{Sin}(\alpha + \beta) = -\frac{2\sqrt{14}\sqrt{5}}{27} + \frac{10}{27}\right) \\ .5 = \left(\mathrm{Cos}(\beta - \alpha) = -\frac{4\sqrt{14}}{27} + \frac{5\sqrt{5}}{27}\right) & .6 = \left(\mathrm{Tan}(\alpha - \beta) = \frac{10\sqrt{14}}{11} + \frac{18\sqrt{5}}{11}\right) \\ .7 = \left(\mathrm{Cos}(2\beta) = \frac{31}{81}\right) & .8 = (\mathrm{Tan}(2\alpha) = -4\sqrt{5}) \end{bmatrix}, \begin{bmatrix} :) \\ :(\\ M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \\ :) \\ :(\end{bmatrix}$$

$$Ans5 = (\mathrm{Sin}(22^o) = (\mathrm{Sqrt}(0.1405) = 0.375)), \begin{bmatrix} M \\ U \\ T \end{bmatrix}$$

$$Ans6 = (\mathrm{Cos}(4^o) = (\mathrm{Sqrt}(0.9950) = 0.998)), \begin{bmatrix} M \\ U \\ T \end{bmatrix}$$

$$Ans1 = \begin{bmatrix} .1 = \left(\text{Cos}\left(\frac{5\pi}{12}\right) = \frac{\sqrt{2}\sqrt{3}}{4} - \frac{\sqrt{2}}{4}\right) & .2 = \left(\text{Sin}(15^o) = \frac{\sqrt{2}\sqrt{3}}{4} - \frac{\sqrt{2}}{4}\right) \\ .3 = \left(\text{Tan}\left(\frac{7\pi}{12}\right) = -2 - \sqrt{3}\right) & .4 = \left(\text{Sec}\left(-\frac{19\pi}{12}\right) = \sqrt{2}\sqrt{3} + \sqrt{2}\right) \\ .5 = (\text{Tan}(255^o) = 2 + \sqrt{3}) & .6 = \left(\text{Cos}\left(-\frac{5\pi}{12}\right) = \frac{\sqrt{2}\sqrt{3}}{4} - \frac{\sqrt{2}}{4}\right) \\ .7 = (\text{Cot}(285^o) = -2 + \sqrt{3}) & .8 = \left(\text{Csc}\left(-\frac{17\pi}{12}\right) = \sqrt{2}\sqrt{3} - \sqrt{2}\right) \end{bmatrix}, \quad , \begin{bmatrix} :) \\ :(\\ M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \\ :) \\ :(\end{bmatrix}$$

$$Ans2 = \begin{bmatrix} .1 = \left(\text{Cos}(15^o)^2 - \text{Sin}(15^o)^2 = \left(\text{Cos}(30^o) = \frac{\sqrt{3}}{2}\right)\right) & .2 = \left(2\,\text{Cos}\left(\frac{\pi}{12}\right)^2 - 1 = \left(\text{Cos}\left(\frac{\pi}{6}\right) = \frac{\sqrt{3}}{2}\right)\right) \\ .3 = \left(\text{Cos}\left(\frac{\pi}{36}\right)\text{Cos}\left(\frac{5\pi}{36}\right) - \text{Sin}\left(\frac{\pi}{36}\right)\text{Sin}\left(\frac{5\pi}{36}\right) = \left(\text{Cos}\left(\frac{\pi}{6}\right) = \frac{\sqrt{3}}{2}\right)\right) & .4 = \left(2\,\text{Sin}\left(\frac{\pi}{8}\right)\text{Cos}\left(\frac{\pi}{8}\right) = \left(\text{Sin}\left(\frac{\pi}{4}\right) = \frac{\sqrt{2}}{2}\right)\right) \\ .5 = \left(\frac{\text{Tan}\left(\frac{\pi}{9}\right) + \text{Tan}\left(\frac{2\pi}{9}\right)}{1 - \text{Tan}\left(\frac{\pi}{9}\right)\text{Tan}\left(\frac{2\pi}{9}\right)} = \left(\text{Tan}\left(\frac{\pi}{3}\right) = \sqrt{3}\right)\right) & .6 = \left(\frac{2\,\text{Tan}(22.5^o)}{1 - \text{Tan}(22.5^o)^2} = (\text{Tan}(45^o) = 1)\right) \\ .7 = (\text{Sin}(80^o)\text{Cos}(10^o) + \text{Cos}(80^o)\text{Sin}(10^o) = (\text{Sin}(90^o) = 1)) & .8 = \left(1 - 2\,\text{Sin}(22.5^o)^2 = \left(\text{Cos}(45^o) = \frac{\sqrt{2}}{2}\right)\right) \\ .9 = \left(\text{Cos}(85^o)\text{Cos}(25^o) + \text{Sin}(85^o)\text{Sin}(25^o) = \left(\text{Cos}(60^o) = \frac{1}{2}\right)\right) & .10 = (\text{Sin}(110^o)\text{Cos}(20^o) - \text{Cos}(110^o)\text{Sin}(20^o) = (\text{Sin}(90^o) = 1)) \end{bmatrix}, \quad , \begin{bmatrix} :) \\ :(\\ :) \\ :(\\ \begin{bmatrix}\begin{bmatrix} M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \end{bmatrix}\end{bmatrix} \\ :) \\ :(\\ :) \\ :(\\ :) \\ :(\end{bmatrix}$$

$$Ans3 = \begin{bmatrix} .1 = \left(\text{Cos}(\alpha) = \frac{\sqrt{65}}{9}\right) & .2 = \left(\text{Sin}(\beta) = \frac{\sqrt{3}}{2}\right) \\ .3 = (\text{Tan}(\beta) = -\sqrt{3}) & .4 = \left(\text{Sin}(\beta - \alpha) = \frac{\sqrt{3}\sqrt{65}}{18} + \frac{2}{9}\right) \\ .5 = \left(\text{Cos}(\alpha - \beta) = -\frac{\sqrt{65}}{18} + \frac{2\sqrt{3}}{9}\right) & .6 = \left(\text{Tan}(\alpha + \beta) = \frac{16\sqrt{65}}{17} - \frac{81\sqrt{3}}{17}\right) \\ .7 = \left(\text{Cos}(2\beta) = \frac{-1}{2}\right) & .8 = \left(\text{Tan}(2\alpha) = \frac{8\sqrt{65}}{49}\right) \end{bmatrix}, \quad , \quad Ans4 = \begin{bmatrix} .1 = \left(\text{Cos}(\alpha) = -\frac{\sqrt{5}}{3}\right) & .2 = \left(\text{Sin}(\beta) = -\frac{\sqrt{3}}{2}\right) \\ .3 = (\text{Tan}(\beta) = -\sqrt{3}) & .4 = \left(\text{Sin}(\beta - \alpha) = \frac{1}{3} + \frac{\sqrt{5}\sqrt{3}}{6}\right) \\ .5 = \left(\text{Cos}(\alpha - \beta) = -\frac{\sqrt{5}}{6} + \frac{\sqrt{3}}{3}\right) & .6 = \left(\text{Tan}(\alpha + \beta) = -\frac{8\sqrt{5}}{7} + \frac{9\sqrt{3}}{7}\right) \\ .7 = \left(\text{Sin}(2\alpha) = \frac{4\sqrt{5}}{9}\right) & .8 = (\text{Tan}(2\beta) = \sqrt{3}) \end{bmatrix}, \quad , \begin{bmatrix} :) \\ :(\\ M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \\ :) \\ :(\end{bmatrix}$$

$$Ans5 = (\text{Cos}(36^o) = (\text{Sqrt}(0.6545) = 0.809)), \quad , \begin{bmatrix} M \\ U \\ T \end{bmatrix}$$

$$Ans6 = (\text{Sin}(7^o) = (\text{Sqrt}(0.0150) = 0.122)), \quad , \begin{bmatrix} M \\ U \\ T \end{bmatrix}$$

$$Ans1 = \begin{bmatrix} .1 = \left(\mathrm{Sin}\left(\frac{\pi}{12}\right) = \frac{\sqrt{2}\sqrt{3}}{4} - \frac{\sqrt{2}}{4}\right) & .2 = \left(\mathrm{Cos}(105^o) = \frac{\sqrt{2}}{4} - \frac{\sqrt{2}\sqrt{3}}{4}\right) \\ .3 = (\mathrm{Tan}(75^o) = 2 + \sqrt{3}) & .4 = (\mathrm{Tan}(165^o) = -2 + \sqrt{3}) \\ .5 = \left(\mathrm{Cos}\left(-\frac{7\pi}{12}\right) = \frac{\sqrt{2}}{4} - \frac{\sqrt{2}\sqrt{3}}{4}\right) & .6 = (\mathrm{Csc}(285^o) = -\sqrt{2}\sqrt{3} + \sqrt{2}) \\ .7 = \left(\mathrm{Sec}\left(-\frac{11\pi}{12}\right) = -\sqrt{2}\sqrt{3} + \sqrt{2}\right) & .8 = \left(\mathrm{Cot}\left(-\frac{17\pi}{12}\right) = -2 + \sqrt{3}\right) \end{bmatrix}, \begin{bmatrix} :) \\ :(\\ M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \\ :) \\ :(\end{bmatrix}$$

$$Ans2 = \begin{bmatrix} .1 = \left(\mathrm{Cos}\left(\frac{\pi}{12}\right)^2 - \mathrm{Sin}\left(\frac{\pi}{12}\right)^2 = \left(\mathrm{Cos}\left(\frac{\pi}{6}\right) = \frac{\sqrt{3}}{2}\right)\right) & .2 = \left(2\,\mathrm{Sin}(22.5^o)\,\mathrm{Cos}(22.5^o) = \left(\mathrm{Sin}(45^o) = \frac{\sqrt{2}}{2}\right)\right) \\ .3 = \left(1 - 2\,\mathrm{Sin}\left(\frac{\pi}{8}\right)^2 = \left(\mathrm{Cos}\left(\frac{\pi}{4}\right) = \frac{\sqrt{2}}{2}\right)\right) & .4 = \left(\mathrm{Sin}\left(\frac{\pi}{18}\right)\mathrm{Cos}\left(\frac{5\pi}{18}\right) + \mathrm{Cos}\left(\frac{\pi}{18}\right)\mathrm{Sin}\left(\frac{5\pi}{18}\right) = \left(\mathrm{Sin}\left(\frac{\pi}{3}\right) = \frac{\sqrt{3}}{2}\right)\right) \\ .5 = \left(\mathrm{Sin}\left(\frac{7\pi}{18}\right)\mathrm{Cos}\left(\frac{\pi}{18}\right) - \mathrm{Cos}\left(\frac{7\pi}{18}\right)\mathrm{Sin}\left(\frac{\pi}{18}\right) = \left(\mathrm{Sin}\left(\frac{\pi}{3}\right) = \frac{\sqrt{3}}{2}\right)\right) & .6 = \left(\mathrm{Cos}(55^o)\,\mathrm{Cos}(10^o) + \mathrm{Sin}(55^o)\,\mathrm{Sin}(10^o) = \left(\mathrm{Cos}(45^o) = \frac{\sqrt{2}}{2}\right)\right) \\ .7 = \left(\frac{\mathrm{Tan}(15^o) + \mathrm{Tan}(30^o)}{1 - \mathrm{Tan}(15^o)\,\mathrm{Tan}(30^o)} = (\mathrm{Tan}(45^o) = 1)\right) & .8 = \left(2\,\mathrm{Cos}(15^o)^2 - 1 = \left(\mathrm{Cos}(30^o) = \frac{\sqrt{3}}{2}\right)\right) \\ .9 = \left(\frac{\mathrm{Tan}\left(\frac{2\pi}{9}\right) - \mathrm{Tan}\left(\frac{\pi}{18}\right)}{1 + \mathrm{Tan}\left(\frac{2\pi}{9}\right)\mathrm{Tan}\left(\frac{\pi}{18}\right)} = \left(\mathrm{Tan}\left(\frac{\pi}{6}\right) = \frac{\sqrt{3}}{3}\right)\right) & .10 = \left(\frac{2\,\mathrm{Tan}\left(\frac{\pi}{8}\right)}{1 - \mathrm{Tan}\left(\frac{\pi}{8}\right)^2} = \left(\mathrm{Tan}\left(\frac{\pi}{4}\right) = \mathrm{Tan}\left(\frac{\pi}{4}\right)\right)\right) \end{bmatrix}, \begin{bmatrix} :) \\ :(\\ :) \\ :(\\ \begin{bmatrix}\begin{bmatrix} M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \end{bmatrix}\end{bmatrix} \\ :) \\ :(\\ :) \\ :(\\ :) \\ :(\end{bmatrix}$$

$$Ans3 = \begin{bmatrix} .1 = \left(\mathrm{Sin}(\alpha) = \frac{2\sqrt{6}}{7}\right) & .2 = \left(\mathrm{Cos}(\beta) = \frac{-4}{5}\right) \\ .3 = \left(\mathrm{Tan}(\alpha) = \frac{2\sqrt{6}}{5}\right) & .4 = \left(\mathrm{Sin}(\alpha - \beta) = -\frac{8\sqrt{6}}{35} + \frac{3}{7}\right) \\ .5 = \left(\mathrm{Cos}(\beta - \alpha) = -\frac{4}{7} - \frac{6\sqrt{6}}{35}\right) & .6 = \left(\mathrm{Tan}(\alpha + \beta) = \frac{125\sqrt{6}}{92} + \frac{147}{46}\right) \\ .7 = \left(\mathrm{Cos}(2\beta) = \frac{7}{25}\right) & .8 = (\mathrm{Tan}(2\alpha) = 20\sqrt{6}) \end{bmatrix}, \quad Ans4 = \begin{bmatrix} .1 = \left(\mathrm{Sin}(\alpha) = -\frac{\sqrt{3}}{2}\right) & .2 = \left(\mathrm{Cos}(\beta) = -\frac{3\sqrt{5}}{7}\right) \\ .3 = (\mathrm{Tan}(\alpha) = -\sqrt{3}) & .4 = \left(\mathrm{Sin}(\beta - \alpha) = \frac{1}{7} - \frac{3\sqrt{5}\sqrt{3}}{14}\right) \\ .5 = \left(\mathrm{Cos}(\alpha + \beta) = -\frac{3\sqrt{5}}{14} + \frac{\sqrt{3}}{7}\right) & .6 = \left(\mathrm{Tan}(\alpha - \beta) = -\frac{49\sqrt{3}}{33} + \frac{8\sqrt{5}}{11}\right) \\ .7 = \left(\mathrm{Cos}(2\alpha) = \frac{-1}{2}\right) & .8 = \left(\mathrm{Tan}(2\beta) = -\frac{12\sqrt{5}}{41}\right) \end{bmatrix}, \begin{bmatrix} :) \\ :(\\ M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \\ :) \\ :(\end{bmatrix}$$

$$Ans5 = (\mathrm{Cos}(25^o) = (\mathrm{Sqrt}(0.8215) = 0.906)), \begin{bmatrix} M \\ U \\ T \end{bmatrix}$$

$$Ans6 = (\mathrm{Sin}(14^o) = (\mathrm{Sqrt}(0.0585) = 0.242)), \begin{bmatrix} M \\ U \\ T \end{bmatrix}$$

$$Ans1 = \begin{bmatrix} .1 = \left(\mathrm{Cos}\left(\frac{5\pi}{12}\right) = \frac{\sqrt{2}\sqrt{3}}{4} - \frac{\sqrt{2}}{4}\right) & .2 = \left(\mathrm{Sin}(105^{o}) = \frac{\sqrt{2}}{4} + \frac{\sqrt{2}\sqrt{3}}{4}\right) \\ .3 = \left(\mathrm{Tan}\left(\frac{\pi}{12}\right) = 2 - \sqrt{3}\right) & .4 = (\mathrm{Csc}((-75)^{o}) = -\sqrt{2}\sqrt{3} + \sqrt{2}) \\ .5 = \left(\mathrm{Cot}\left(\frac{13\pi}{12}\right) = 2 + \sqrt{3}\right) & .6 = (\mathrm{Sec}((-285)^{o}) = \sqrt{2}\sqrt{3} + \sqrt{2}) \\ .7 = \left(\mathrm{Tan}\left(-\frac{13\pi}{12}\right) = -2 + \sqrt{3}\right) & .8 = \left(\mathrm{Cos}((-105)^{o}) = \frac{\sqrt{2}}{4} - \frac{\sqrt{2}\sqrt{3}}{4}\right) \end{bmatrix}, \begin{bmatrix} :) \\ :(\\ M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \\ :) \\ :(\end{bmatrix}$$

$$Ans2 = \begin{bmatrix} .1 = \left(\mathrm{Sin}(85^{o})\,\mathrm{Cos}(25^{o}) - \mathrm{Cos}(85^{o})\,\mathrm{Sin}(25^{o}) = \left(\mathrm{Sin}(60^{o}) = \frac{\sqrt{3}}{2}\right)\right) & .2 = \left(\mathrm{Cos}\left(\frac{\pi}{12}\right)^2 - \mathrm{Sin}\left(\frac{\pi}{12}\right)^2 = \left(\mathrm{Cos}\left(\frac{\pi}{6}\right) = \frac{\sqrt{3}}{2}\right)\right) \\ .3 = \left(\frac{2\,\mathrm{Tan}\left(\frac{\pi}{8}\right)}{1 - \mathrm{Tan}\left(\frac{\pi}{8}\right)^2} = \left(\mathrm{Tan}\left(\frac{\pi}{4}\right) = \mathrm{Tan}\left(\frac{\pi}{4}\right)\right)\right) & .4 = \left(2\,\mathrm{Sin}(15^{o})\,\mathrm{Cos}(15^{o}) = \left(\mathrm{Sin}(30^{o}) = \frac{1}{2}\right)\right) \\ .5 = \left(2\,\mathrm{Cos}(22.5^{o})^2 - 1 = \left(\mathrm{Cos}(45^{o}) = \frac{\sqrt{2}}{2}\right)\right) & .6 = \left(\mathrm{Cos}\left(\frac{5\pi}{12}\right)\mathrm{Cos}\left(\frac{\pi}{12}\right) - \mathrm{Sin}\left(\frac{5\pi}{12}\right)\mathrm{Sin}\left(\frac{\pi}{12}\right) = \left(\mathrm{Cos}\left(\frac{\pi}{2}\right) = 0\right)\right) \\ .7 = \left(\mathrm{Sin}(12^{o})\,\mathrm{Cos}(33^{o}) + \mathrm{Cos}(12^{o})\,\mathrm{Sin}(33^{o}) = \left(\mathrm{Sin}(45^{o}) = \frac{\sqrt{2}}{2}\right)\right) & .8 = \left(\frac{\mathrm{Tan}\left(\frac{5\pi}{18}\right) + \mathrm{Tan}\left(\frac{\pi}{18}\right)}{1 - \mathrm{Tan}\left(\frac{5\pi}{18}\right)\mathrm{Tan}\left(\frac{\pi}{18}\right)} = \left(\mathrm{Tan}\left(\frac{\pi}{3}\right) = \sqrt{3}\right)\right) \\ .9 = (\mathrm{Cos}(105^{o})\,\mathrm{Cos}(15^{o}) + \mathrm{Sin}(105^{o})\,\mathrm{Sin}(15^{o}) = (\mathrm{Cos}(90^{o}) = 0)) & .10 = \left(1 - 2\,\mathrm{Sin}\left(\frac{\pi}{8}\right)^2 = \left(\mathrm{Cos}\left(\frac{\pi}{4}\right) = \frac{\sqrt{2}}{2}\right)\right) \end{bmatrix}, \begin{bmatrix} :) \\ :(\\ :) \\ :(\\ \begin{bmatrix}\begin{bmatrix} M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \end{bmatrix}\end{bmatrix} \\ :) \\ :(\\ :) \\ :(\\ :) \\ :(\end{bmatrix}$$

$$Ans3 = \begin{bmatrix} .1 = \left(\mathrm{Cos}(\alpha) = \frac{\sqrt{3}}{2}\right) & .2 = \left(\mathrm{Sin}(\beta) = -\frac{\sqrt{11}}{6}\right) \\ .3 = \left(\mathrm{Tan}(\beta) = -\frac{\sqrt{11}}{5}\right) & .4 = \left(\mathrm{Sin}(\alpha - \beta) = \frac{5}{12} + \frac{\sqrt{3}\sqrt{11}}{12}\right) \\ .5 = \left(\mathrm{Cos}(\alpha + \beta) = \frac{5\sqrt{3}}{12} + \frac{\sqrt{11}}{12}\right) & .6 = \left(\mathrm{Tan}(\beta - \alpha) = -\frac{5\sqrt{11}}{16} - \frac{9\sqrt{3}}{16}\right) \\ .7 = \left(\mathrm{Cos}(2\beta) = \frac{7}{18}\right) & .8 = (\mathrm{Tan}(2\alpha) = \sqrt{3}) \end{bmatrix}, \quad Ans4 = \begin{bmatrix} .1 = \left(\mathrm{Cos}(\alpha) = -\frac{\sqrt{15}}{4}\right) & .2 = \left(\mathrm{Sin}(\beta) = -\frac{\sqrt{55}}{8}\right) \\ .3 = \left(\mathrm{Tan}(\beta) = \frac{\sqrt{55}}{3}\right) & .4 = \left(\mathrm{Sin}(\alpha + \beta) = -\frac{3}{32} + \frac{\sqrt{55}\sqrt{15}}{32}\right) \\ .5 = \left(\mathrm{Cos}(\beta - \alpha) = \frac{3\sqrt{15}}{32} - \frac{\sqrt{55}}{32}\right) & .6 = \left(\mathrm{Tan}(\alpha - \beta) = -\frac{3\sqrt{5}\sqrt{11}}{5} - \frac{4\sqrt{5}\sqrt{3}}{5}\right) \\ .7 = \left(\mathrm{Sin}(2\beta) = \frac{3\sqrt{55}}{32}\right) & .8 = \left(\mathrm{Tan}(2\alpha) = -\frac{\sqrt{15}}{7}\right) \end{bmatrix}, \begin{bmatrix} :) \\ :(\\ M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \\ :) \\ :(\end{bmatrix}$$

$$Ans5 = (\mathrm{Sin}(23^{o}) = (\mathrm{Sqrt}(0.1525) = 0.391)), \quad \begin{bmatrix} M \\ U \\ T \end{bmatrix}$$

$$Ans6 = (\mathrm{Cos}(9^{o}) = (\mathrm{Sqrt}(0.9755) = 0.988)), \quad \begin{bmatrix} M \\ U \\ T \end{bmatrix}$$

TrigonometryExercise4 Answers for No.645106

$$Ans1 = \begin{bmatrix} .1 = \left(\text{Sin}(75^o) = \frac{\sqrt{2}}{4} + \frac{\sqrt{2}\sqrt{3}}{4}\right) & .2 = \left(\text{Cos}\left(\frac{7\pi}{12}\right) = \frac{\sqrt{2}}{4} - \frac{\sqrt{2}\sqrt{3}}{4}\right) \\ .3 = \left(\text{Tan}\left(\frac{\pi}{12}\right) = 2 - \sqrt{3}\right) & .4 = \left(\text{Sec}(255^o) = -\sqrt{2}\sqrt{3} - \sqrt{2}\right) \\ .5 = \left(\text{Csc}\left(-\frac{\pi}{12}\right) = -\sqrt{2}\sqrt{3} - \sqrt{2}\right) & .6 = \left(\text{Cos}(345^o) = \frac{\sqrt{2}}{4} + \frac{\sqrt{2}\sqrt{3}}{4}\right) \\ .7 = \left(\text{Sin}\left(\frac{11\pi}{12}\right) = \frac{\sqrt{2}\sqrt{3}}{4} - \frac{\sqrt{2}}{4}\right) & .8 = \left(\text{Cot}\left(\frac{19\pi}{12}\right) = -2 + \sqrt{3}\right) \end{bmatrix}, \ , \begin{bmatrix} :) \\ :(\\ M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \\ :) \\ :(\end{bmatrix}$$

$$Ans2 = \begin{bmatrix} .1 = \left(\frac{2\,\text{Tan}\left(\frac{\pi}{8}\right)}{1 - \text{Tan}\left(\frac{\pi}{8}\right)^2} = \left(\text{Tan}\left(\frac{\pi}{4}\right) = \text{Tan}\left(\frac{\pi}{4}\right)\right)\right) & .2 = \left(\text{Cos}(75^o)\,\text{Cos}(15^o) - \text{Sin}(75^o)\,\text{Sin}(15^o) = \left(\text{Cos}(90^o) = 0\right)\right) \\ .3 = \left(2\,\text{Cos}\left(\frac{\pi}{12}\right)^2 - 1 = \left(\text{Cos}\left(\frac{\pi}{6}\right) = \frac{\sqrt{3}}{2}\right)\right) & .4 = \left(\text{Cos}(15^o)^2 - \text{Sin}(15^o)^2 = \left(\text{Cos}(30^o) = \frac{\sqrt{3}}{2}\right)\right) \\ .5 = \left(\frac{\text{Tan}\left(\frac{2\pi}{5}\right) - \text{Tan}\left(\frac{\pi}{15}\right)}{1 + \text{Tan}\left(\frac{2\pi}{5}\right)\text{Tan}\left(\frac{\pi}{15}\right)} = \left(\text{Tan}\left(\frac{\pi}{3}\right) = \sqrt{3}\right)\right) & .6 = \left(2\,\text{Sin}\left(\frac{\pi}{8}\right)\text{Cos}\left(\frac{\pi}{8}\right) = \left(\text{Sin}\left(\frac{\pi}{4}\right) = \frac{\sqrt{2}}{2}\right)\right) \\ .7 = \left(1 - 2\,\text{Sin}(22.5^o)^2 = \left(\text{Cos}(45^o) = \frac{\sqrt{2}}{2}\right)\right) & .8 = \left(\text{Cos}(50^o)\,\text{Cos}(20^o) + \text{Sin}(50^o)\,\text{Sin}(20^o) = \left(\text{Cos}(30^o) = \frac{\sqrt{3}}{2}\right)\right) \\ .9 = \left(\frac{\text{Tan}(10^o) + \text{Tan}(20^o)}{1 - \text{Tan}(10^o)\,\text{Tan}(20^o)} = \left(\text{Tan}(30^o) = \frac{\sqrt{3}}{3}\right)\right) & .10 = \left(\text{Sin}\left(\frac{\pi}{18}\right)\text{Cos}\left(\frac{5\pi}{18}\right) + \text{Cos}\left(\frac{\pi}{18}\right)\text{Sin}\left(\frac{5\pi}{18}\right) = \left(\text{Sin}\left(\frac{\pi}{3}\right) = \frac{\sqrt{3}}{2}\right)\right) \end{bmatrix}, \ , \begin{bmatrix} :) \\ :(\\ :) \\ :(\\ \begin{bmatrix}\begin{bmatrix} M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \end{bmatrix}\end{bmatrix} \\ :) \\ :(\\ :) \\ :(\\ :) \\ :(\end{bmatrix}$$

$$Ans3 = \begin{bmatrix} .1 = \left(\text{Cos}(\alpha) = \frac{2\sqrt{6}}{7}\right) & .2 = \left(\text{Sin}(\beta) = -\frac{\sqrt{3}}{2}\right) \\ .3 = \left(\text{Tan}(\beta) = -\sqrt{3}\right) & .4 = \left(\text{Sin}(\alpha + \beta) = \frac{5}{14} - \frac{\sqrt{6}\sqrt{3}}{7}\right) \\ .5 = \left(\text{Cos}(\beta - \alpha) = \frac{\sqrt{6}}{7} - \frac{5\sqrt{3}}{14}\right) & .6 = \left(\text{Tan}(\alpha - \beta) = -\frac{40\sqrt{2}\sqrt{3}}{51} - \frac{49\sqrt{3}}{51}\right) \\ .7 = \left(\text{Sin}(2\alpha) = \frac{20\sqrt{6}}{49}\right) & .8 = \left(\text{Tan}(2\beta) = \sqrt{3}\right) \end{bmatrix}, \ , Ans4 = \begin{bmatrix} .1 = \left(\text{Sin}(\alpha) = -\frac{2\sqrt{2}}{3}\right) & .2 = \left(\text{Cos}(\beta) = -\frac{\sqrt{3}}{2}\right) \\ .3 = \left(\text{Tan}(\beta) = -\frac{\sqrt{3}}{3}\right) & .4 = \left(\text{Sin}(\alpha - \beta) = \frac{1}{6} + \frac{\sqrt{2}\sqrt{3}}{3}\right) \\ .5 = \left(\text{Cos}(\alpha + \beta) = \frac{\sqrt{3}}{6} + \frac{\sqrt{2}}{3}\right) & .6 = \left(\text{Tan}(\beta - \alpha) = \frac{9\sqrt{3}}{5} + \frac{8\sqrt{2}}{5}\right) \\ .7 = \left(\text{Sin}(2\beta) = -\frac{\sqrt{3}}{2}\right) & .8 = \left(\text{Tan}(2\alpha) = -\frac{4\sqrt{2}}{7}\right) \end{bmatrix}, \ , \begin{bmatrix} :) \\ :(\\ M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \\ :) \\ :(\end{bmatrix}$$

$$Ans5 = \left(\text{Sin}(8^o) = \left(\text{Sqrt}(0.0195) = 0.139\right)\right), \ , \begin{bmatrix} M \\ U \\ T \end{bmatrix}$$

$$Ans6 = \left(\text{Cos}(20^o) = \left(\text{Sqrt}(0.8830) = 0.940\right)\right), \ , \begin{bmatrix} M \\ U \\ T \end{bmatrix}$$

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$$Ans1 = \begin{bmatrix} .1 = \left(\mathrm{Sin}(15^o) = \frac{\sqrt{2}\sqrt{3}}{4} - \frac{\sqrt{2}}{4}\right) & .2 = \left(\mathrm{Cos}\left(\frac{5\pi}{12}\right) = \frac{\sqrt{2}\sqrt{3}}{4} - \frac{\sqrt{2}}{4}\right) \\ .3 = \left(\mathrm{Tan}\left(\frac{7\pi}{12}\right) = -2 - \sqrt{3}\right) & .4 = \left(\mathrm{Cos}\left(\frac{17\pi}{12}\right) = \frac{\sqrt{2}}{4} - \frac{\sqrt{2}\sqrt{3}}{4}\right) \\ .5 = (\mathrm{Cot}((-75)^o) = -2 + \sqrt{3}) & .6 = \left(\mathrm{Sin}(345^o) = \frac{\sqrt{2}}{4} - \frac{\sqrt{2}\sqrt{3}}{4}\right) \\ .7 = \left(\mathrm{Csc}\left(-\frac{7\pi}{12}\right) = -\sqrt{2}\sqrt{3} + \sqrt{2}\right) & .8 = \left(\mathrm{Sec}\left(\frac{13\pi}{12}\right) = -\sqrt{2}\sqrt{3} + \sqrt{2}\right) \end{bmatrix}, \begin{bmatrix} :) \\ :(\\ M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \\ :) \\ :(\end{bmatrix}$$

$$Ans2 = \begin{bmatrix} .1 = \left(1 - 2\,\mathrm{Sin}\left(\frac{\pi}{8}\right)^2 = \left(\mathrm{Cos}\left(\frac{\pi}{4}\right) = \frac{\sqrt{2}}{2}\right)\right) & .2 = \left(\mathrm{Cos}\left(\frac{\pi}{12}\right)^2 - \mathrm{Sin}\left(\frac{\pi}{12}\right)^2 = \left(\mathrm{Cos}\left(\frac{\pi}{6}\right) = \frac{\sqrt{3}}{2}\right)\right) \\ .3 = \left(\mathrm{Sin}(30^o)\,\mathrm{Cos}(15^o) + \mathrm{Cos}(30^o)\,\mathrm{Sin}(15^o) = \left(\mathrm{Sin}(45^o) = \frac{\sqrt{2}}{2}\right)\right) & .4 = \left(2\,\mathrm{Cos}(15^o)^2 - 1 = \left(\mathrm{Cos}(30^o) = \frac{\sqrt{3}}{2}\right)\right) \\ .5 = \left(\mathrm{Cos}(50^o)\,\mathrm{Cos}(20^o) + \mathrm{Sin}(50^o)\,\mathrm{Sin}(20^o) = \left(\mathrm{Cos}(30^o) = \frac{\sqrt{3}}{2}\right)\right) & .6 = \left(\mathrm{Sin}(57^o)\,\mathrm{Cos}(12^o) - \mathrm{Cos}(57^o)\,\mathrm{Sin}(12^o) = \left(\mathrm{Sin}(45^o) = \frac{\sqrt{2}}{2}\right)\right) \\ .7 = \left(\frac{\mathrm{Tan}\left(\frac{17\pi}{36}\right) - \mathrm{Tan}\left(\frac{5\pi}{36}\right)}{1 + \mathrm{Tan}\left(\frac{17\pi}{36}\right)\mathrm{Tan}\left(\frac{5\pi}{36}\right)} = \left(\mathrm{Tan}\left(\frac{\pi}{3}\right) = \sqrt{3}\right)\right) & .8 = \left(2\,\mathrm{Sin}(22.5^o)\,\mathrm{Cos}(22.5^o) = \left(\mathrm{Sin}(45^o) = \frac{\sqrt{2}}{2}\right)\right) \\ .9 = \left(\frac{\mathrm{Tan}\left(\frac{\pi}{9}\right) + \mathrm{Tan}\left(\frac{2\pi}{9}\right)}{1 - \mathrm{Tan}\left(\frac{\pi}{9}\right)\mathrm{Tan}\left(\frac{2\pi}{9}\right)} = \left(\mathrm{Tan}\left(\frac{\pi}{3}\right) = \sqrt{3}\right)\right) & .10 = \left(\frac{2\,\mathrm{Tan}(22.5^o)}{1 - \mathrm{Tan}(22.5^o)^2} = (\mathrm{Tan}(45^o) = 1)\right) \end{bmatrix}, \begin{bmatrix} :) \\ :(\\ :) \\ :(\\ \left[\left[\begin{matrix} M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \end{matrix}\right]\right] \\ :) \\ :(\\ :) \\ :(\\ :) \\ :(\end{bmatrix}$$

$$Ans3 = \begin{bmatrix} .1 = \left(\mathrm{Sin}(\alpha) = \frac{\sqrt{3}}{2}\right) & .2 = \left(\mathrm{Cos}(\beta) = \frac{-4}{5}\right) \\ .3 = \left(\mathrm{Tan}(\beta) = \frac{-3}{4}\right) & .4 = \left(\mathrm{Sin}(\alpha - \beta) = -\frac{2\sqrt{3}}{5} - \frac{3}{10}\right) \\ .5 = \left(\mathrm{Cos}(\beta - \alpha) = -\frac{2}{5} + \frac{3\sqrt{3}}{10}\right) & .6 = \left(\mathrm{Tan}(\alpha + \beta) = -\frac{25\sqrt{3}}{11} + \frac{48}{11}\right) \\ .7 = \left(\mathrm{Cos}(2\alpha) = \frac{-1}{2}\right) & .8 = \left(\mathrm{Tan}(2\beta) = \frac{-24}{7}\right) \end{bmatrix}, \quad Ans4 = \begin{bmatrix} .1 = \left(\mathrm{Sin}(\alpha) = \frac{-3}{5}\right) & .2 = \left(\mathrm{Cos}(\beta) = \frac{2\sqrt{2}}{3}\right) \\ .3 = \left(\mathrm{Tan}(\alpha) = \frac{3}{4}\right) & .4 = \left(\mathrm{Sin}(\beta - \alpha) = \frac{4}{15} + \frac{2\sqrt{2}}{5}\right) \\ .5 = \left(\mathrm{Cos}(\alpha + \beta) = -\frac{8\sqrt{2}}{15} - \frac{1}{5}\right) & .6 = \left(\mathrm{Tan}(\alpha - \beta) = \frac{108}{119} + \frac{50\sqrt{2}}{119}\right) \\ .7 = \left(\mathrm{Cos}(2\beta) = \frac{7}{9}\right) & .8 = \left(\mathrm{Tan}(2\alpha) = \frac{24}{7}\right) \end{bmatrix}, \begin{bmatrix} :) \\ :(\\ M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \\ :) \\ :(\end{bmatrix}$$

$$Ans5 = (\mathrm{Cos}(3^o) = (\mathrm{Sqrt}(0.9975) = 0.999)), \quad \begin{bmatrix} M \\ U \\ T \end{bmatrix}$$

$$Ans6 = (\mathrm{Sin}(21^o) = (\mathrm{Sqrt}(0.1285) = 0.358)), \quad \begin{bmatrix} M \\ U \\ T \end{bmatrix}$$

TrigonometryExercise4 Answers for No.645108

$$Ans1 = \begin{bmatrix} .1 = \left(\mathrm{Sin}(105^o) = \frac{\sqrt{2}}{4} + \frac{\sqrt{2}\sqrt{3}}{4}\right) & .2 = \left(\mathrm{Cos}\left(\frac{5\pi}{12}\right) = \frac{\sqrt{2}\sqrt{3}}{4} - \frac{\sqrt{2}}{4}\right) \\ .3 = \left(\mathrm{Tan}\left(\frac{\pi}{12}\right) = 2 - \sqrt{3}\right) & .4 = (\mathrm{Sec}((-345)^o) = \sqrt{2}\sqrt{3} - \sqrt{2}) \\ .5 = \left(\mathrm{Sin}\left(\frac{19\pi}{12}\right) = -\frac{\sqrt{2}}{4} - \frac{\sqrt{2}\sqrt{3}}{4}\right) & .6 = \left(\mathrm{Csc}\left(-\frac{19\pi}{12}\right) = \sqrt{2}\sqrt{3} - \sqrt{2}\right) \\ .7 = (\mathrm{Tan}((-75)^o) = -2 - \sqrt{3}) & .8 = \left(\mathrm{Cot}\left(-\frac{17\pi}{12}\right) = -2 + \sqrt{3}\right) \end{bmatrix}, \begin{bmatrix} :) \\ :(\\ M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \\ :) \\ :(\end{bmatrix}$$

$$Ans2 = \begin{bmatrix} .1 = \left((1 - 2\,\mathrm{Sin}(15^o))^2 = \left(\mathrm{Cos}(30^o) = \frac{\sqrt{3}}{2}\right)\right) & .2 = \left(2\,\mathrm{Cos}\left(\frac{\pi}{8}\right)^2 - 1 = \left(\mathrm{Cos}\left(\frac{\pi}{4}\right) = \frac{\sqrt{2}}{2}\right)\right) \\ .3 = \left(\mathrm{Sin}(30^o)\,\mathrm{Cos}(15^o) + \mathrm{Cos}(30^o)\,\mathrm{Sin}(15^o) = \left(\mathrm{Sin}(45^o) = \frac{\sqrt{2}}{2}\right)\right) & .4 = \left(\mathrm{Cos}\left(\frac{7\pi}{36}\right)\mathrm{Cos}\left(\frac{\pi}{36}\right) + \mathrm{Sin}\left(\frac{7\pi}{36}\right)\mathrm{Sin}\left(\frac{\pi}{36}\right) = \left(\mathrm{Cos}\left(\frac{\pi}{6}\right) = \frac{\sqrt{3}}{2}\right)\right) \\ .5 = \left(2\,\mathrm{Sin}(22.5^o)\,\mathrm{Cos}(22.5^o) = \left(\mathrm{Sin}(45^o) = \frac{\sqrt{2}}{2}\right)\right) & .6 = \left(\frac{\mathrm{Tan}(72^o) - \mathrm{Tan}(12^o)}{1 + \mathrm{Tan}(72^o)\,\mathrm{Tan}(12^o)} = (\mathrm{Tan}(60^o) = \sqrt{3})\right) \\ .7 = \left(\frac{\mathrm{Tan}\left(\frac{\pi}{18}\right) + \mathrm{Tan}\left(\frac{\pi}{9}\right)}{1 - \mathrm{Tan}\left(\frac{\pi}{18}\right)\mathrm{Tan}\left(\frac{\pi}{9}\right)} = \left(\mathrm{Tan}\left(\frac{\pi}{6}\right) = \frac{\sqrt{3}}{3}\right)\right) & .8 = \left(\frac{2\,\mathrm{Tan}\left(\frac{\pi}{8}\right)}{1 - \mathrm{Tan}\left(\frac{\pi}{8}\right)^2} = \left(\mathrm{Tan}\left(\frac{\pi}{4}\right) = \mathrm{Tan}\left(\frac{\pi}{4}\right)\right)\right) \\ .9 = \left(\mathrm{Cos}\left(\frac{\pi}{12}\right)^2 - \mathrm{Sin}\left(\frac{\pi}{12}\right)^2 = \left(\mathrm{Cos}\left(\frac{\pi}{6}\right) = \frac{\sqrt{3}}{2}\right)\right) & .10 = \left(\mathrm{Cos}\left(\frac{5\pi}{18}\right)\mathrm{Cos}\left(\frac{\pi}{18}\right) - \mathrm{Sin}\left(\frac{5\pi}{18}\right)\mathrm{Sin}\left(\frac{\pi}{18}\right) = \left(\mathrm{Cos}\left(\frac{\pi}{3}\right) = \frac{1}{2}\right)\right) \end{bmatrix}, \begin{bmatrix} :) \\ :(\\ :) \\ :(\\ \left[\left[\begin{matrix} M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \end{matrix}\right]\right] \\ :) \\ :(\\ :) \\ :(\\ :) \\ :(\end{bmatrix}$$

$$Ans3 = \begin{bmatrix} .1 = \left(\mathrm{Cos}(\alpha) = \frac{\sqrt{11}}{6}\right) & .2 = \left(\mathrm{Sin}(\beta) = -\frac{\sqrt{7}}{4}\right) \\ .3 = \left(\mathrm{Tan}(\alpha) = \frac{5\sqrt{11}}{11}\right) & .4 = \left(\mathrm{Sin}(\alpha - \beta) = -\frac{5}{8} + \frac{\sqrt{11}\sqrt{7}}{24}\right) \\ .5 = \left(\mathrm{Cos}(\beta - \alpha) = -\frac{\sqrt{11}}{8} - \frac{5\sqrt{7}}{24}\right) & .6 = \left(\mathrm{Tan}(\alpha + \beta) = -\frac{20\sqrt{11}}{19} - \frac{27\sqrt{7}}{19}\right) \\ .7 = \left(\mathrm{Sin}(2\beta) = \frac{3\sqrt{7}}{8}\right) & .8 = \left(\mathrm{Tan}(2\alpha) = -\frac{5\sqrt{11}}{7}\right) \end{bmatrix}, \quad Ans4 = \begin{bmatrix} .1 = \left(\mathrm{Sin}(\alpha) = -\frac{\sqrt{7}}{4}\right) & .2 = \left(\mathrm{Cos}(\beta) = -\frac{2\sqrt{6}}{5}\right) \\ .3 = \left(\mathrm{Tan}(\beta) = -\frac{\sqrt{6}}{12}\right) & .4 = \left(\mathrm{Sin}(\alpha + \beta) = \frac{\sqrt{7}\sqrt{6}}{10} + \frac{3}{20}\right) \\ .5 = \left(\mathrm{Cos}(\alpha - \beta) = -\frac{3\sqrt{6}}{10} - \frac{\sqrt{7}}{20}\right) & .6 = \left(\mathrm{Tan}(\beta - \alpha) = -\frac{32\sqrt{6}}{209} + \frac{75\sqrt{7}}{209}\right) \\ .7 = \left(\mathrm{Cos}(2\beta) = \frac{23}{25}\right) & .8 = (\mathrm{Tan}(2\alpha) = -3\sqrt{7}) \end{bmatrix}, \begin{bmatrix} :) \\ :(\\ M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \\ :) \\ :(\end{bmatrix}$$

$$Ans5 = (\mathrm{Cos}(19^o) = (\mathrm{Sqrt}(0.8940) = 0.946)), \quad \begin{bmatrix} M \\ U \\ T \end{bmatrix}$$

$$Ans6 = (\mathrm{Sin}(8^o) = (\mathrm{Sqrt}(0.0195) = 0.139)), \quad \begin{bmatrix} M \\ U \\ T \end{bmatrix}$$

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$$Ans1 = \begin{bmatrix} .1 = \left(\operatorname{Cos}\left(\frac{5\pi}{12}\right) = \frac{\sqrt{2}\sqrt{3}}{4} - \frac{\sqrt{2}}{4}\right) & .2 = \left(\operatorname{Sin}(15^{o}) = \frac{\sqrt{2}\sqrt{3}}{4} - \frac{\sqrt{2}}{4}\right) \\ .3 = (\operatorname{Tan}(105^{o}) = -2 - \sqrt{3}) & .4 = \left(\operatorname{Csc}\left(-\frac{23\pi}{12}\right) = \sqrt{2}\sqrt{3} + \sqrt{2}\right) \\ .5 = (\operatorname{Tan}(345^{o}) = -2 + \sqrt{3}) & .6 = \left(\operatorname{Sin}((\text{-}105)^{o}) = -\frac{\sqrt{2}}{4} - \frac{\sqrt{2}\sqrt{3}}{4}\right) \\ .7 = \left(\operatorname{Sec}\left(\frac{19\pi}{12}\right) = \sqrt{2}\sqrt{3} + \sqrt{2}\right) & .8 = (\operatorname{Cot}((\text{-}165)^{o}) = 2 + \sqrt{3}) \end{bmatrix}, \begin{bmatrix} :) \\ :(\\ M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \\ :) \\ :(\end{bmatrix}$$

$$Ans2 = \begin{bmatrix} .1 = \left(1 - 2\operatorname{Sin}\left(\frac{\pi}{8}\right)^2 = \left(\operatorname{Cos}\left(\frac{\pi}{4}\right) = \frac{\sqrt{2}}{2}\right)\right) & .2 = \left(\frac{\operatorname{Tan}(20^{o}) + \operatorname{Tan}(40^{o})}{1 - \operatorname{Tan}(20^{o})\operatorname{Tan}(40^{o})} = (\operatorname{Tan}(60^{o}) = \sqrt{3})\right) \\ .3 = \left(\frac{2\operatorname{Tan}\left(\frac{\pi}{8}\right)}{1 - \operatorname{Tan}\left(\frac{\pi}{8}\right)^2} = \left(\operatorname{Tan}\left(\frac{\pi}{4}\right) = \operatorname{Tan}\left(\frac{\pi}{4}\right)\right)\right) & .4 = \left(2\operatorname{Cos}(22.5^{o})^2 - 1 = \left(\operatorname{Cos}(45^{o}) = \frac{\sqrt{2}}{2}\right)\right) \\ .5 = \left(\operatorname{Cos}(57^{o})\operatorname{Cos}(12^{o}) + \operatorname{Sin}(57^{o})\operatorname{Sin}(12^{o}) = \left(\operatorname{Cos}(45^{o}) = \frac{\sqrt{2}}{2}\right)\right) & .6 = (\operatorname{Cos}(75^{o})\operatorname{Cos}(15^{o}) - \operatorname{Sin}(75^{o})\operatorname{Sin}(15^{o}) = (\operatorname{Cos}(90^{o}) = 0)) \\ .7 = \left(2\operatorname{Sin}\left(\frac{\pi}{12}\right)\operatorname{Cos}\left(\frac{\pi}{12}\right) = \left(\operatorname{Sin}\left(\frac{\pi}{6}\right) = \frac{1}{2}\right)\right) & .8 = \left(\operatorname{Cos}(15^{o})^2 - \operatorname{Sin}(15^{o})^2 = \left(\operatorname{Cos}(30^{o}) = \frac{\sqrt{3}}{2}\right)\right) \\ .9 = \left(\frac{\operatorname{Tan}\left(\frac{17\pi}{36}\right) - \operatorname{Tan}\left(\frac{5\pi}{36}\right)}{1 + \operatorname{Tan}\left(\frac{17\pi}{36}\right)\operatorname{Tan}\left(\frac{5\pi}{36}\right)} = \left(\operatorname{Tan}\left(\frac{\pi}{3}\right) = \sqrt{3}\right)\right) & .10 = \left(\operatorname{Sin}\left(\frac{11\pi}{18}\right)\operatorname{Cos}\left(\frac{\pi}{9}\right) - \operatorname{Cos}\left(\frac{11\pi}{18}\right)\operatorname{Sin}\left(\frac{\pi}{9}\right) = \left(\operatorname{Sin}\left(\frac{\pi}{2}\right) = 1\right)\right) \end{bmatrix}, \begin{bmatrix} :) \\ :(\\ :) \\ :(\\ \begin{bmatrix}\begin{bmatrix} M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \end{bmatrix}\end{bmatrix} \\ :) \\ :(\\ :) \\ :(\\ :) \\ :(\end{bmatrix}$$

$$Ans3 = \begin{bmatrix} .1 = \left(\operatorname{Sin}(\alpha) = \frac{3\sqrt{5}}{7}\right) & .2 = \left(\operatorname{Cos}(\beta) = -\frac{2\sqrt{10}}{7}\right) \\ .3 = \left(\operatorname{Tan}(\beta) = \frac{3\sqrt{10}}{20}\right) & .4 = \left(\operatorname{Sin}(\beta - \alpha) = -\frac{6}{49} + \frac{6\sqrt{5}\sqrt{10}}{49}\right) \\ .5 = \left(\operatorname{Cos}(\alpha - \beta) = -\frac{4\sqrt{10}}{49} - \frac{9\sqrt{5}}{49}\right) & .6 = \left(\operatorname{Tan}(\alpha + \beta) = -\frac{6\sqrt{5}}{5} - \frac{6\sqrt{5}\sqrt{2}}{5}\right) \\ .7 = \left(\operatorname{Sin}(2\alpha) = \frac{12\sqrt{5}}{49}\right) & .8 = \left(\operatorname{Tan}(2\beta) = \frac{12\sqrt{10}}{31}\right) \end{bmatrix}, \quad Ans4 = \begin{bmatrix} .1 = \left(\operatorname{Cos}(\alpha) = \frac{2\sqrt{2}}{3}\right) & .2 = \left(\operatorname{Sin}(\beta) = \frac{3}{5}\right) \\ .3 = \left(\operatorname{Tan}(\beta) = \frac{\text{-}3}{4}\right) & .4 = \left(\operatorname{Sin}(\beta - \alpha) = \frac{2\sqrt{2}}{5} - \frac{4}{15}\right) \\ .5 = \left(\operatorname{Cos}(\alpha + \beta) = -\frac{8\sqrt{2}}{15} + \frac{1}{5}\right) & .6 = \left(\operatorname{Tan}(\alpha - \beta) = -\frac{50\sqrt{2}}{119} + \frac{108}{119}\right) \\ .7 = \left(\operatorname{Sin}(2\alpha) = -\frac{4\sqrt{2}}{9}\right) & .8 = \left(\operatorname{Tan}(2\beta) = \frac{\text{-}24}{7}\right) \end{bmatrix}, \begin{bmatrix} :) \\ :(\\ M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \\ :) \\ :(\end{bmatrix}$$

$$Ans5 = (\operatorname{Sin}(6^{o}) = (\operatorname{Sqrt}(0.0110) = 0.105)), \quad , \begin{bmatrix} M \\ U \\ T \end{bmatrix}$$

$$Ans6 = (\operatorname{Cos}(39^{o}) = (\operatorname{Sqrt}(0.6040) = 0.777)), \quad , \begin{bmatrix} M \\ U \\ T \end{bmatrix}$$

$$Ans1 = \begin{bmatrix} .1 = \left(\text{Sin}\left(\frac{5\pi}{12}\right) = \frac{\sqrt{2}}{4} + \frac{\sqrt{2}\sqrt{3}}{4}\right) & .2 = \left(\text{Cos}(105^{\circ}) = \frac{\sqrt{2}}{4} - \frac{\sqrt{2}\sqrt{3}}{4}\right) \\ .3 = (\text{Tan}(15^{\circ}) = 2 - \sqrt{3}) & .4 = (\text{Sec}((-75)^{\circ}) = \sqrt{2}\sqrt{3} + \sqrt{2}) \\ .5 = \left(\text{Csc}\left(\frac{13\pi}{12}\right) = -\sqrt{2}\sqrt{3} - \sqrt{2}\right) & .6 = (\text{Tan}(255^{\circ}) = 2 + \sqrt{3}) \\ .7 = \left(\text{Cos}\left(\frac{19\pi}{12}\right) = \frac{\sqrt{2}\sqrt{3}}{4} - \frac{\sqrt{2}}{4}\right) & .8 = \left(\text{Cot}\left(\frac{23\pi}{12}\right) = -2 - \sqrt{3}\right) \end{bmatrix}, \;, \begin{bmatrix} :) \\ :(\\ M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \\ :) \\ :(\end{bmatrix}$$

$$Ans2 = \begin{bmatrix} .1 = \left(\text{Cos}\left(\frac{5\pi}{12}\right)\text{Cos}\left(\frac{\pi}{12}\right) - \text{Sin}\left(\frac{5\pi}{12}\right)\text{Sin}\left(\frac{\pi}{12}\right) = \left(\text{Cos}\left(\frac{\pi}{2}\right) = 0\right)\right) & .2 = \left(1 - 2\,\text{Sin}(22.5^{\circ})^2 = \left(\text{Cos}(45^{\circ}) = \frac{\sqrt{2}}{2}\right)\right) \\ .3 = \left(\dfrac{\text{Tan}\left(\frac{\pi}{10}\right) + \text{Tan}\left(\frac{\pi}{15}\right)}{1 - \text{Tan}\left(\frac{\pi}{10}\right)\text{Tan}\left(\frac{\pi}{15}\right)} = \left(\text{Tan}\left(\frac{\pi}{6}\right) = \frac{\sqrt{3}}{3}\right)\right) & .4 = \left(\text{Sin}(80^{\circ})\,\text{Cos}(20^{\circ}) - \text{Cos}(80^{\circ})\,\text{Sin}(20^{\circ}) = \left(\text{Sin}(60^{\circ}) = \frac{\sqrt{3}}{2}\right)\right) \\ .5 = \left(\text{Sin}(30^{\circ})\,\text{Cos}(15^{\circ}) + \text{Cos}(30^{\circ})\,\text{Sin}(15^{\circ}) = \left(\text{Sin}(45^{\circ}) = \frac{\sqrt{2}}{2}\right)\right) & .6 = \left(2\,\text{Sin}\left(\frac{\pi}{8}\right)\text{Cos}\left(\frac{\pi}{8}\right) = \left(\text{Sin}\left(\frac{\pi}{4}\right) = \frac{\sqrt{2}}{2}\right)\right) \\ .7 = \left(\dfrac{\text{Tan}(40^{\circ}) - \text{Tan}(10^{\circ})}{1 + \text{Tan}(40^{\circ})\,\text{Tan}(10^{\circ})} = \left(\text{Tan}(30^{\circ}) = \frac{\sqrt{3}}{3}\right)\right) & .8 = \left(\dfrac{2\,\text{Tan}(15^{\circ})}{1 - \text{Tan}(15^{\circ})^2} = \left(\text{Tan}(30^{\circ}) = \frac{\sqrt{3}}{3}\right)\right) \\ .9 = \left(2\,\text{Cos}\left(\frac{\pi}{12}\right)^2 - 1 = \left(\text{Cos}\left(\frac{\pi}{6}\right) = \frac{\sqrt{3}}{2}\right)\right) & .10 = \left(\text{Cos}(15^{\circ})^2 - \text{Sin}(15^{\circ})^2 = \left(\text{Cos}(30^{\circ}) = \frac{\sqrt{3}}{2}\right)\right) \end{bmatrix}, \;, \begin{bmatrix} :) \\ :(\\ :) \\ :(\\ \left[\left[\begin{matrix} M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \end{matrix}\right]\right] \\ :) \\ :(\\ :) \\ :(\\ :) \\ :(\end{bmatrix}$$

$$Ans3 = \begin{bmatrix} .1 = \left(\text{Sin}(\alpha) = \frac{\sqrt{15}}{4}\right) & .2 = \left(\text{Cos}(\beta) = -\frac{\sqrt{7}}{4}\right) \\ .3 = (\text{Tan}(\alpha) = \sqrt{15}) & .4 = \left(\text{Sin}(\alpha + \beta) = -\frac{\sqrt{15}\sqrt{7}}{16} - \frac{3}{16}\right) \\ .5 = \left(\text{Cos}(\beta - \alpha) = -\frac{\sqrt{7}}{16} - \frac{3\sqrt{15}}{16}\right) & .6 = \left(\text{Tan}(\alpha - \beta) = -\frac{\sqrt{15}}{8} + \frac{3\sqrt{7}}{8}\right) \\ .7 = \left(\text{Cos}(2\alpha) = \frac{-7}{8}\right) & .8 = (\text{Tan}(2\beta) = -3\sqrt{7}) \end{bmatrix}, \;, Ans4 = \begin{bmatrix} .1 = \left(\text{Sin}(\alpha) = -\frac{\sqrt{65}}{9}\right) & .2 = \left(\text{Cos}(\beta) = -\frac{2\sqrt{2}}{3}\right) \\ .3 = \left(\text{Tan}(\beta) = -\frac{\sqrt{2}}{4}\right) & .4 = \left(\text{Sin}(\beta - \alpha) = \frac{4}{27} - \frac{2\sqrt{65}\sqrt{2}}{27}\right) \\ .5 = \left(\text{Cos}(\alpha - \beta) = -\frac{8\sqrt{2}}{27} - \frac{\sqrt{65}}{27}\right) & .6 = \left(\text{Tan}(\alpha + \beta) = -\frac{4\sqrt{65}}{7} - \frac{18\sqrt{2}}{7}\right) \\ .7 = \left(\text{Cos}(2\beta) = \frac{7}{9}\right) & .8 = \left(\text{Tan}(2\alpha) = \frac{8\sqrt{65}}{49}\right) \end{bmatrix}, \;, \begin{bmatrix} :) \\ :(\\ M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \\ :) \\ :(\end{bmatrix}$$

$$Ans5 = (\text{Sin}(5^{\circ}) = (\text{Sqrt}(0.0075) = 0.087)), \;, \begin{bmatrix} M \\ U \\ T \end{bmatrix}$$

$$Ans6 = (\text{Cos}(34^{\circ}) = (\text{Sqrt}(0.6875) = 0.829)), \;, \begin{bmatrix} M \\ U \\ T \end{bmatrix}$$

$$Ans1 = \begin{bmatrix} .1 = \left(\mathrm{Sin}(75^{o}) = \frac{\sqrt{2}}{4} + \frac{\sqrt{2}\sqrt{3}}{4}\right) & .2 = \left(\mathrm{Cos}\left(\frac{\pi}{12}\right) = \frac{\sqrt{2}}{4} + \frac{\sqrt{2}\sqrt{3}}{4}\right) \\ .3 = \left(\mathrm{Tan}\left(\frac{7\pi}{12}\right) = -2 - \sqrt{3}\right) & .4 = \left(\mathrm{Csc}\left(-\frac{17\pi}{12}\right) = \sqrt{2}\sqrt{3} - \sqrt{2}\right) \\ .5 = \left(\mathrm{Cos}((-285)^{o}) = \frac{\sqrt{2}\sqrt{3}}{4} - \frac{\sqrt{2}}{4}\right) & .6 = \left(\mathrm{Tan}((-195)^{o}) = -2 + \sqrt{3}\right) \\ .7 = \left(\mathrm{Sin}\left(\frac{17\pi}{12}\right) = -\frac{\sqrt{2}}{4} - \frac{\sqrt{2}\sqrt{3}}{4}\right) & .8 = \left(\mathrm{Sec}((-15)^{o}) = \sqrt{2}\sqrt{3} - \sqrt{2}\right) \end{bmatrix}, \begin{bmatrix} :) \\ :(\\ M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \\ :) \\ :(\end{bmatrix}$$

$$Ans2 = \begin{bmatrix} .1 = \left(2\,\mathrm{Cos}\left(\frac{\pi}{8}\right)^2 - 1 = \left(\mathrm{Cos}\left(\frac{\pi}{4}\right) = \frac{\sqrt{2}}{2}\right)\right) & .2 = \left(1 - 2\,\mathrm{Sin}(22.5^{o})^2 = \left(\mathrm{Cos}(45^{o}) = \frac{\sqrt{2}}{2}\right)\right) \\ .3 = \left(\mathrm{Sin}(70^{o})\,\mathrm{Cos}(10^{o}) - \mathrm{Cos}(70^{o})\,\mathrm{Sin}(10^{o}) = \left(\mathrm{Sin}(60^{o}) = \frac{\sqrt{3}}{2}\right)\right) & .4 = \left(\mathrm{Sin}\left(\frac{7\pi}{36}\right)\mathrm{Cos}\left(\frac{\pi}{18}\right) + \mathrm{Cos}\left(\frac{7\pi}{36}\right)\mathrm{Sin}\left(\frac{\pi}{18}\right) = \left(\mathrm{Sin}\left(\frac{\pi}{4}\right) = \frac{\sqrt{2}}{2}\right)\right) \\ .5 = \left(\frac{\mathrm{Tan}(55^{o}) - \mathrm{Tan}(10^{o})}{1 + \mathrm{Tan}(55^{o})\,\mathrm{Tan}(10^{o})} = (\mathrm{Tan}(45^{o}) = 1)\right) & .6 = \left(2\,\mathrm{Sin}\left(\frac{\pi}{12}\right)\mathrm{Cos}\left(\frac{\pi}{12}\right) = \left(\mathrm{Sin}\left(\frac{\pi}{6}\right) = \frac{1}{2}\right)\right) \\ .7 = \left(\frac{2\,\mathrm{Tan}\left(\frac{\pi}{12}\right)}{1 - \mathrm{Tan}\left(\frac{\pi}{12}\right)^2} = \left(\mathrm{Tan}\left(\frac{\pi}{6}\right) = \mathrm{Tan}\left(\frac{\pi}{6}\right)\right)\right) & .8 = \left(\mathrm{Cos}(15^{o})^2 - \mathrm{Sin}(15^{o})^2 = \left(\mathrm{Cos}(30^{o}) = \frac{\sqrt{3}}{2}\right)\right) \\ .9 = \left(\mathrm{Cos}(12^{o})\,\mathrm{Cos}(18^{o}) - \mathrm{Sin}(12^{o})\,\mathrm{Sin}(18^{o}) = \left(\mathrm{Cos}(30^{o}) = \frac{\sqrt{3}}{2}\right)\right) & .10 = \left(\frac{\mathrm{Tan}\left(\frac{4\pi}{15}\right) + \mathrm{Tan}\left(\frac{\pi}{15}\right)}{1 - \mathrm{Tan}\left(\frac{4\pi}{15}\right)\mathrm{Tan}\left(\frac{\pi}{15}\right)} = \left(\mathrm{Tan}\left(\frac{\pi}{3}\right) = \sqrt{3}\right)\right) \end{bmatrix}, \begin{bmatrix} :) \\ :(\\ :) \\ :(\\ \left[\left[\begin{matrix} M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \end{matrix}\right]\right] \\ :) \\ :(\\ :) \\ :(\\ :) \\ :(\end{bmatrix}$$

$$Ans3 = \begin{bmatrix} .1 = \left(\mathrm{Sin}(\alpha) = \frac{2\sqrt{2}}{3}\right) & .2 = \left(\mathrm{Cos}(\beta) = \frac{\sqrt{65}}{9}\right) \\ .3 = \left(\mathrm{Tan}(\beta) = -\frac{4\sqrt{65}}{65}\right) & .4 = \left(\mathrm{Sin}(\alpha - \beta) = \frac{2\sqrt{65}\sqrt{2}}{27} + \frac{4}{27}\right) \\ .5 = \left(\mathrm{Cos}(\alpha + \beta) = \frac{\sqrt{65}}{27} + \frac{8\sqrt{2}}{27}\right) & .6 = \left(\mathrm{Tan}(\beta - \alpha) = \frac{4\sqrt{65}}{7} + \frac{18\sqrt{2}}{7}\right) \\ .7 = \left(\mathrm{Cos}(2\alpha) = \frac{-7}{9}\right) & .8 = \left(\mathrm{Tan}(2\beta) = -\frac{8\sqrt{65}}{49}\right) \end{bmatrix}, \quad Ans4 = \begin{bmatrix} .1 = \left(\mathrm{Sin}(\alpha) = \frac{\sqrt{3}}{2}\right) & .2 = \left(\mathrm{Cos}(\beta) = \frac{-3}{5}\right) \\ .3 = \left(\mathrm{Tan}(\beta) = \frac{4}{3}\right) & .4 = \left(\mathrm{Sin}(\alpha + \beta) = -\frac{3\sqrt{3}}{10} + \frac{2}{5}\right) \\ .5 = \left(\mathrm{Cos}(\beta - \alpha) = \frac{3}{10} - \frac{2\sqrt{3}}{5}\right) & .6 = \left(\mathrm{Tan}(\alpha - \beta) = \frac{25\sqrt{3}}{39} + \frac{16}{13}\right) \\ .7 = \left(\mathrm{Sin}(2\alpha) = -\frac{\sqrt{3}}{2}\right) & .8 = \left(\mathrm{Tan}(2\beta) = \frac{-24}{7}\right) \end{bmatrix}, \begin{bmatrix} :) \\ :(\\ M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \\ :) \\ :(\end{bmatrix}$$

$$Ans5 = (\mathrm{Sin}(23^{o}) = (\mathrm{Sqrt}(0.1525) = 0.391)), \quad \begin{bmatrix} M \\ U \\ T \end{bmatrix}$$

$$Ans6 = (\mathrm{Cos}(43^{o}) = (\mathrm{Sqrt}(0.5350) = 0.731)), \quad \begin{bmatrix} M \\ U \\ T \end{bmatrix}$$

$$Ans1 = \begin{bmatrix} .1 = \left(\cos\left(\frac{\pi}{12}\right) = \frac{\sqrt{2}}{4} + \frac{\sqrt{2}\sqrt{3}}{4}\right) & .2 = \left(\sin(105^o) = \frac{\sqrt{2}}{4} + \frac{\sqrt{2}\sqrt{3}}{4}\right) \\ .3 = \left(\tan\left(\frac{5\pi}{12}\right) = 2 + \sqrt{3}\right) & .4 = \left(\csc\left(\frac{23\pi}{12}\right) = -\sqrt{2}\sqrt{3} - \sqrt{2}\right) \\ .5 = \left(\sin(195^o) = \frac{\sqrt{2}}{4} - \frac{\sqrt{2}\sqrt{3}}{4}\right) & .6 = \left(\cos\left(-\frac{23\pi}{12}\right) = \frac{\sqrt{2}}{4} + \frac{\sqrt{2}\sqrt{3}}{4}\right) \\ .7 = (\cot(285^o) = -2 + \sqrt{3}) & .8 = (\sec((-105)^o) = -\sqrt{2}\sqrt{3} - \sqrt{2}) \end{bmatrix}, \begin{bmatrix} :) \\ :(\\ M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \\ :) \\ :(\end{bmatrix}$$

$$Ans2 = \begin{bmatrix} .1 = \left(2\cos\left(\frac{\pi}{12}\right)^2 - 1 = \left(\cos\left(\frac{\pi}{6}\right) = \frac{\sqrt{3}}{2}\right)\right) & .2 = \left(\frac{2\tan\left(\frac{\pi}{12}\right)}{1 - \tan\left(\frac{\pi}{12}\right)^2} = \left(\tan\left(\frac{\pi}{6}\right) = \tan\left(\frac{\pi}{6}\right)\right)\right) \\ .3 = \left(2\sin(22.5^o)\cos(22.5^o) = \left(\sin(45^o) = \frac{\sqrt{2}}{2}\right)\right) & .4 = \left(1 - 2\sin\left(\frac{\pi}{8}\right)^2 = \left(\cos\left(\frac{\pi}{4}\right) = \frac{\sqrt{2}}{2}\right)\right) \\ .5 = \left(\frac{\tan\left(\frac{5\pi}{18}\right) - \tan\left(\frac{\pi}{9}\right)}{1 + \tan\left(\frac{5\pi}{18}\right)\tan\left(\frac{\pi}{9}\right)} = \left(\tan\left(\frac{\pi}{6}\right) = \frac{\sqrt{3}}{3}\right)\right) & .6 = \left(\cos(20^o)\cos(25^o) - \sin(20^o)\sin(25^o) = \left(\cos(45^o) = \frac{\sqrt{2}}{2}\right)\right) \\ .7 = \left(\cos(15^o)^2 - \sin(15^o)^2 = \left(\cos(30^o) = \frac{\sqrt{3}}{2}\right)\right) & .8 = \left(\cos(72^o)\cos(12^o) + \sin(72^o)\sin(12^o) = \left(\cos(60^o) = \frac{1}{2}\right)\right) \\ .9 = \left(\sin\left(\frac{4\pi}{9}\right)\cos\left(\frac{\pi}{18}\right) + \cos\left(\frac{4\pi}{9}\right)\sin\left(\frac{\pi}{18}\right) = \left(\sin\left(\frac{\pi}{2}\right) = 1\right)\right) & .10 = (\sin(105^o)\cos(15^o) - \cos(105^o)\sin(15^o) = (\sin(90^o) = 1)) \end{bmatrix}, \begin{bmatrix} :) \\ :(\\ :) \\ :(\\ \left[\left[\begin{matrix} M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \end{matrix}\right]\right] \\ :) \\ :(\\ :) \\ :(\\ :) \\ :(\end{bmatrix}$$

$$Ans3 = \begin{bmatrix} .1 = \left(\cos(\alpha) = \frac{\sqrt{3}}{2}\right) & .2 = \left(\sin(\beta) = -\frac{2\sqrt{2}}{3}\right) \\ .3 = (\tan(\beta) = -2\sqrt{2}) & .4 = \left(\sin(\alpha - \beta) = \frac{1}{6} + \frac{\sqrt{2}\sqrt{3}}{3}\right) \\ .5 = \left(\cos(\alpha + \beta) = \frac{\sqrt{3}}{6} + \frac{\sqrt{2}}{3}\right) & .6 = \left(\tan(\beta - \alpha) = \frac{9\sqrt{3}}{5} + \frac{8\sqrt{2}}{5}\right) \\ .7 = \left(\cos(2\beta) = \frac{-7}{9}\right) & .8 = (\tan(2\alpha) = \sqrt{3}) \end{bmatrix}, \quad Ans4 = \begin{bmatrix} .1 = \left(\sin(\alpha) = -\frac{\sqrt{35}}{6}\right) & .2 = \left(\cos(\beta) = -\frac{\sqrt{3}}{2}\right) \\ .3 = (\tan(\alpha) = \sqrt{35}) & .4 = \left(\sin(\alpha + \beta) = \frac{\sqrt{3}\sqrt{35}}{12} - \frac{1}{12}\right) \\ .5 = \left(\cos(\beta - \alpha) = \frac{\sqrt{3}}{12} - \frac{\sqrt{35}}{12}\right) & .6 = \left(\tan(\alpha - \beta) = -\frac{\sqrt{35}}{8} - \frac{9\sqrt{3}}{8}\right) \\ .7 = \left(\cos(2\alpha) = \frac{-17}{18}\right) & .8 = (\tan(2\beta) = -\sqrt{3}) \end{bmatrix}, \begin{bmatrix} :) \\ :(\\ M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \\ :) \\ :(\end{bmatrix}$$

$$Ans5 = (\cos(9^o) = (\mathrm{Sqrt}(0.9755) = 0.988)), \begin{bmatrix} M \\ U \\ T \end{bmatrix}$$

$$Ans6 = (\sin(23^o) = (\mathrm{Sqrt}(0.1525) = 0.391)), \begin{bmatrix} M \\ U \\ T \end{bmatrix}$$

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$$Ans1 = \begin{bmatrix} .1 = \left(\mathrm{Sin}(75^{o}) = \frac{\sqrt{2}}{4} + \frac{\sqrt{2}\sqrt{3}}{4}\right) & .2 = \left(\mathrm{Cos}\left(\frac{\pi}{12}\right) = \frac{\sqrt{2}}{4} + \frac{\sqrt{2}\sqrt{3}}{4}\right) \\ .3 = (\mathrm{Tan}(105^{o}) = -2 - \sqrt{3}) & .4 = (\mathrm{Tan}(165^{o}) = -2 + \sqrt{3}) \\ .5 = \left(\mathrm{Sin}\left(-\frac{7\pi}{12}\right) = -\frac{\sqrt{2}}{4} - \frac{\sqrt{2}\sqrt{3}}{4}\right) & .6 = \left(\mathrm{Cos}((-345)^{o}) = \frac{\sqrt{2}}{4} + \frac{\sqrt{2}\sqrt{3}}{4}\right) \\ .7 = \left(\mathrm{Cot}\left(-\frac{5\pi}{12}\right) = -2 + \sqrt{3}\right) & .8 = (\mathrm{Csc}((-165)^{o}) = -\sqrt{2}\sqrt{3} - \sqrt{2}) \end{bmatrix}, \begin{bmatrix} :) \\ :(\\ M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \\ :) \\ :(\end{bmatrix}$$

$$Ans2 = \begin{bmatrix} .1 = \left(2\,\mathrm{Cos}\left(\frac{\pi}{12}\right)^2 - 1 = \left(\mathrm{Cos}\left(\frac{\pi}{6}\right) = \frac{\sqrt{3}}{2}\right)\right) & .2 = \left(\frac{2\,\mathrm{Tan}\left(\frac{\pi}{12}\right)}{1 - \mathrm{Tan}\left(\frac{\pi}{12}\right)^2} = \left(\mathrm{Tan}\left(\frac{\pi}{6}\right) = \mathrm{Tan}\left(\frac{\pi}{6}\right)\right)\right) \\ .3 = \left(2\,\mathrm{Sin}(15^{o})\,\mathrm{Cos}(15^{o}) = \left(\mathrm{Sin}(30^{o}) = \frac{1}{2}\right)\right) & .4 = \left(\mathrm{Cos}\left(\frac{11\pi}{60}\right)\mathrm{Cos}\left(\frac{\pi}{15}\right) - \mathrm{Sin}\left(\frac{11\pi}{60}\right)\mathrm{Sin}\left(\frac{\pi}{15}\right) = \left(\mathrm{Cos}\left(\frac{\pi}{4}\right) = \frac{\sqrt{2}}{2}\right)\right) \\ .5 = \left(1 - 2\,\mathrm{Sin}(22.5^{o})^2 = \left(\mathrm{Cos}(45^{o}) = \frac{\sqrt{2}}{2}\right)\right) & .6 = \left(\mathrm{Cos}\left(\frac{\pi}{8}\right)^2 - \mathrm{Sin}\left(\frac{\pi}{8}\right)^2 = \left(\mathrm{Cos}\left(\frac{\pi}{4}\right) = \frac{\sqrt{2}}{2}\right)\right) \\ .7 = \left(\frac{\mathrm{Tan}\left(\frac{17\pi}{36}\right) - \mathrm{Tan}\left(\frac{5\pi}{36}\right)}{1 + \mathrm{Tan}\left(\frac{17\pi}{36}\right)\mathrm{Tan}\left(\frac{5\pi}{36}\right)} = \left(\mathrm{Tan}\left(\frac{\pi}{3}\right) = \sqrt{3}\right)\right) & .8 = \left(\mathrm{Cos}(60^{o})\,\mathrm{Cos}(15^{o}) + \mathrm{Sin}(60^{o})\,\mathrm{Sin}(15^{o}) = \left(\mathrm{Cos}(45^{o}) = \frac{\sqrt{2}}{2}\right)\right) \\ .9 = \left(\frac{\mathrm{Tan}(20^{o}) + \mathrm{Tan}(40^{o})}{1 - \mathrm{Tan}(20^{o})\,\mathrm{Tan}(40^{o})} = (\mathrm{Tan}(60^{o}) = \sqrt{3})\right) & .10 = \left(\mathrm{Sin}\left(\frac{2\pi}{9}\right)\mathrm{Cos}\left(\frac{\pi}{18}\right) - \mathrm{Cos}\left(\frac{2\pi}{9}\right)\mathrm{Sin}\left(\frac{\pi}{18}\right) = \left(\mathrm{Sin}\left(\frac{\pi}{6}\right) = \frac{1}{2}\right)\right) \end{bmatrix}, \begin{bmatrix} :) \\ :(\\ :) \\ :(\\ \left[\begin{bmatrix} M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \end{bmatrix}\right] \\ :) \\ :(\\ :) \\ :(\\ :) \\ :(\end{bmatrix}$$

$$Ans3 = \begin{bmatrix} .1 = \left(\mathrm{Cos}(\alpha) = \frac{\sqrt{3}}{2}\right) & .2 = \left(\mathrm{Sin}(\beta) = \frac{\sqrt{33}}{7}\right) \\ .3 = \left(\mathrm{Tan}(\alpha) = \frac{\sqrt{3}}{3}\right) & .4 = \left(\mathrm{Sin}(\alpha - \beta) = -\frac{2}{7} - \frac{\sqrt{3}\sqrt{33}}{14}\right) \\ .5 = \left(\mathrm{Cos}(\beta - \alpha) = -\frac{2\sqrt{3}}{7} + \frac{\sqrt{33}}{14}\right) & .6 = \left(\mathrm{Tan}(\alpha + \beta) = \frac{49\sqrt{3}}{15} - \frac{16\sqrt{3}\sqrt{11}}{15}\right) \\ .7 = \left(\mathrm{Cos}(2\beta) = \frac{-17}{49}\right) & .8 = (\mathrm{Tan}(2\alpha) = \sqrt{3}) \end{bmatrix}, \; Ans4 = \begin{bmatrix} .1 = \left(\mathrm{Sin}(\alpha) = -\frac{2\sqrt{6}}{5}\right) & .2 = \left(\mathrm{Cos}(\beta) = \frac{\sqrt{21}}{5}\right) \\ .3 = \left(\mathrm{Tan}(\beta) = -\frac{2\sqrt{21}}{21}\right) & .4 = \left(\mathrm{Sin}(\alpha + \beta) = -\frac{2\sqrt{6}\sqrt{21}}{25} + \frac{2}{25}\right) \\ .5 = \left(\mathrm{Cos}(\alpha - \beta) = -\frac{\sqrt{21}}{25} + \frac{4\sqrt{6}}{25}\right) & .6 = \left(\mathrm{Tan}(\beta - \alpha) = \frac{2\sqrt{3}\sqrt{7}}{3} + \frac{2\sqrt{2}\sqrt{3}}{3}\right) \\ .7 = \left(\mathrm{Sin}(2\alpha) = \frac{4\sqrt{6}}{25}\right) & .8 = \left(\mathrm{Tan}(2\beta) = -\frac{4\sqrt{21}}{17}\right) \end{bmatrix}, \begin{bmatrix} :) \\ :(\\ M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \\ :) \\ :(\end{bmatrix}$$

$$Ans5 = (\mathrm{Sin}(23^{o}) = (\mathrm{Sqrt}(0.1525) = 0.391)), \; \begin{bmatrix} M \\ U \\ T \end{bmatrix}$$

$$Ans6 = (\mathrm{Cos}(7^{o}) = (\mathrm{Sqrt}(0.9850) = 0.993)), \; \begin{bmatrix} M \\ U \\ T \end{bmatrix}$$

$$Ans1 = \begin{bmatrix} .1 = \left(\mathrm{Sin}\left(\frac{5\pi}{12}\right) = \frac{\sqrt{2}}{4} + \frac{\sqrt{2}\sqrt{3}}{4}\right) & .2 = \left(\mathrm{Cos}(15^o) = \frac{\sqrt{2}}{4} + \frac{\sqrt{2}\sqrt{3}}{4}\right) \\ .3 = \left(\mathrm{Tan}\left(\frac{7\pi}{12}\right) = -2 - \sqrt{3}\right) & .4 = \left(\mathrm{Sec}\left(-\frac{17\pi}{12}\right) = -\sqrt{2}\sqrt{3} - \sqrt{2}\right) \\ .5 = \left(\mathrm{Cos}(165^o) = -\frac{\sqrt{2}}{4} - \frac{\sqrt{2}\sqrt{3}}{4}\right) & .6 = (\mathrm{Csc}(255^o) = -\sqrt{2}\sqrt{3} + \sqrt{2}) \\ .7 = \left(\mathrm{Cot}\left(\frac{19\pi}{12}\right) = -2 + \sqrt{3}\right) & .8 = \left(\mathrm{Tan}\left(-\frac{13\pi}{12}\right) = -2 + \sqrt{3}\right) \end{bmatrix}, \begin{bmatrix} \underline{:)} \\ :(\\ M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \\ \underline{:)} \\ :(\end{bmatrix}$$

$$Ans2 = \begin{bmatrix} .1 = \left(2\,\mathrm{Cos}(22.5^o)^2 - 1 = \left(\mathrm{Cos}(45^o) = \frac{\sqrt{2}}{2}\right)\right) & .2 = \left(\mathrm{Sin}(50^o)\,\mathrm{Cos}(20^o) - \mathrm{Cos}(50^o)\,\mathrm{Sin}(20^o) = \left(\mathrm{Sin}(30^o) = \frac{1}{2}\right)\right) \\ .3 = \left(\frac{\mathrm{Tan}\left(\frac{\pi}{18}\right) + \mathrm{Tan}\left(\frac{7\pi}{36}\right)}{1 - \mathrm{Tan}\left(\frac{\pi}{18}\right)\mathrm{Tan}\left(\frac{7\pi}{36}\right)} = \left(\mathrm{Tan}\left(\frac{\pi}{4}\right) = 1\right)\right) & .4 = \left(\mathrm{Cos}\left(\frac{\pi}{15}\right)\mathrm{Cos}\left(\frac{4\pi}{15}\right) - \mathrm{Sin}\left(\frac{\pi}{15}\right)\mathrm{Sin}\left(\frac{4\pi}{15}\right) = \left(\mathrm{Cos}\left(\frac{\pi}{3}\right) = \frac{1}{2}\right)\right) \\ .5 = \left(\mathrm{Cos}\left(\frac{\pi}{12}\right)^2 - \mathrm{Sin}\left(\frac{\pi}{12}\right)^2 = \left(\mathrm{Cos}\left(\frac{\pi}{6}\right) = \frac{\sqrt{3}}{2}\right)\right) & .6 = \left(2\,\mathrm{Sin}(15^o)\,\mathrm{Cos}(15^o) = \left(\mathrm{Sin}(30^o) = \frac{1}{2}\right)\right) \\ .7 = \left(\frac{2\,\mathrm{Tan}\left(\frac{\pi}{12}\right)}{1 - \mathrm{Tan}\left(\frac{\pi}{12}\right)^2} = \left(\mathrm{Tan}\left(\frac{\pi}{6}\right) = \mathrm{Tan}\left(\frac{\pi}{6}\right)\right)\right) & .8 = \left(\frac{\mathrm{Tan}(60^o) - \mathrm{Tan}(15^o)}{1 + \mathrm{Tan}(60^o)\,\mathrm{Tan}(15^o)} = (\mathrm{Tan}(45^o) = 1)\right) \\ .9 = (\mathrm{Sin}(80^o)\,\mathrm{Cos}(10^o) + \mathrm{Cos}(80^o)\,\mathrm{Sin}(10^o) = (\mathrm{Sin}(90^o) = 1)) & .10 = \left(1 - 2\,\mathrm{Sin}\left(\frac{\pi}{8}\right)^2 = \left(\mathrm{Cos}\left(\frac{\pi}{4}\right) = \frac{\sqrt{2}}{2}\right)\right) \end{bmatrix}, \begin{bmatrix} \underline{:)} \\ :(\\ \underline{:)} \\ :(\\ \left[\left[\begin{matrix} M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \end{matrix}\right]\right] \\ \underline{:)} \\ :(\\ \underline{:)} \\ :(\\ \underline{:)} \\ :(\end{bmatrix}$$

$$Ans3 = \begin{bmatrix} .1 = \left(\mathrm{Cos}(\alpha) = \frac{\sqrt{3}}{2}\right) & .2 = \left(\mathrm{Sin}(\beta) = -\frac{\sqrt{7}}{4}\right) \\ .3 = \left(\mathrm{Tan}(\alpha) = \frac{\sqrt{3}}{3}\right) & .4 = \left(\mathrm{Sin}(\alpha+\beta) = -\frac{3}{8} - \frac{\sqrt{3}\sqrt{7}}{8}\right) \\ .5 = \left(\mathrm{Cos}(\alpha-\beta) = -\frac{3\sqrt{3}}{8} - \frac{\sqrt{7}}{8}\right) & .6 = \left(\mathrm{Tan}(\beta-\alpha) = \frac{3\sqrt{7}}{5} - \frac{4\sqrt{3}}{5}\right) \\ .7 = \left(\mathrm{Cos}(2\alpha) = \frac{1}{2}\right) & .8 = (\mathrm{Tan}(2\beta) = 3\sqrt{7}) \end{bmatrix}, \quad Ans4 = \begin{bmatrix} .1 = \left(\mathrm{Sin}(\alpha) = -\frac{\sqrt{3}}{2}\right) & .2 = \left(\mathrm{Cos}(\beta) = -\frac{\sqrt{15}}{4}\right) \\ .3 = \left(\mathrm{Tan}(\beta) = -\frac{\sqrt{15}}{15}\right) & .4 = \left(\mathrm{Sin}(\alpha-\beta) = \frac{\sqrt{15}\sqrt{3}}{8} - \frac{1}{8}\right) \\ .5 = \left(\mathrm{Cos}(\beta-\alpha) = -\frac{\sqrt{15}}{8} - \frac{\sqrt{3}}{8}\right) & .6 = \left(\mathrm{Tan}(\alpha+\beta) = -\frac{4\sqrt{3}}{3} - \frac{\sqrt{5}\sqrt{3}}{3}\right) \\ .7 = \left(\mathrm{Cos}(2\beta) = \frac{7}{8}\right) & .8 = (\mathrm{Tan}(2\alpha) = \sqrt{3}) \end{bmatrix}, \begin{bmatrix} \underline{:)} \\ :(\\ M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \\ \underline{:)} \\ :(\end{bmatrix}$$

$$Ans5 = (\mathrm{Sin}(36^o) = (\mathrm{Sqrt}(0.3455) = 0.588)), \begin{bmatrix} M \\ U \\ T \end{bmatrix}$$

$$Ans6 = (\mathrm{Cos}(16^o) = (\mathrm{Sqrt}(0.9240) = 0.961)), \begin{bmatrix} M \\ U \\ T \end{bmatrix}$$

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Ans1 =

$$.1 = \left(\text{Sin}\left(\frac{7\pi}{12}\right) = \frac{\sqrt{2}}{4} + \frac{\sqrt{2}\sqrt{3}}{4}\right) \qquad .2 = \left(\text{Cos}(15^o) = \frac{\sqrt{2}}{4} + \frac{\sqrt{2}\sqrt{3}}{4}\right)$$

$$.3 = \left(\text{Tan}\left(\frac{5\pi}{12}\right) = 2 + \sqrt{3}\right) \qquad .4 = \left(\text{Sin}(285^o) = -\frac{\sqrt{2}}{4} - \frac{\sqrt{2}\sqrt{3}}{4}\right)$$

$$.5 = \left(\text{Cos}\left(-\frac{7\pi}{12}\right) = \frac{\sqrt{2}}{4} - \frac{\sqrt{2}\sqrt{3}}{4}\right) \qquad .6 = \left(\text{Tan}\left(-\frac{\pi}{12}\right) = -2 + \sqrt{3}\right)$$

$$.7 = (\text{Csc}(165^o) = \sqrt{2}\sqrt{3} + \sqrt{2}) \qquad .8 = (\text{Cot}(345^o) = -2 - \sqrt{3})$$

, [:) :(M a t h @ M U T :) :(]

Ans2 =

$$.1 = \left(\frac{\text{Tan}\left(\frac{5\pi}{18}\right) + \text{Tan}\left(\frac{\pi}{18}\right)}{1 - \text{Tan}\left(\frac{5\pi}{18}\right)\text{Tan}\left(\frac{\pi}{18}\right)} = \left(\text{Tan}\left(\frac{\pi}{3}\right) = \sqrt{3}\right)\right) \qquad .2 = \left(1 - 2\,\text{Sin}(15^o)^2 = \left(\text{Cos}(30^o) = \frac{\sqrt{3}}{2}\right)\right)$$

$$.3 = \left(2\,\text{Sin}\left(\frac{\pi}{12}\right)\text{Cos}\left(\frac{\pi}{12}\right) = \left(\text{Sin}\left(\frac{\pi}{6}\right) = \frac{1}{2}\right)\right) \qquad .4 = \left(\text{Cos}\left(\frac{19\pi}{60}\right)\text{Cos}\left(\frac{\pi}{15}\right) + \text{Sin}\left(\frac{19\pi}{60}\right)\text{Sin}\left(\frac{\pi}{15}\right) = \left(\text{Cos}\left(\frac{\pi}{4}\right) = \frac{\sqrt{2}}{2}\right)\right)$$

$$.5 = \left(\text{Cos}(22.5^o)^2 - \text{Sin}(22.5^o)^2 = \left(\text{Cos}(45^o) = \frac{\sqrt{2}}{2}\right)\right) \qquad .6 = \left(2\,\text{Cos}\left(\frac{\pi}{8}\right)^2 - 1 = \left(\text{Cos}\left(\frac{\pi}{4}\right) = \frac{\sqrt{2}}{2}\right)\right)$$

$$.7 = \left(\frac{2\,\text{Tan}(15^o)}{1 - \text{Tan}(15^o)^2} = \left(\text{Tan}(30^o) = \frac{\sqrt{3}}{3}\right)\right) \qquad .8 = \left(\frac{\text{Tan}(80^o) - \text{Tan}(20^o)}{1 + \text{Tan}(80^o)\,\text{Tan}(20^o)} = (\text{Tan}(60^o) = \sqrt{3})\right)$$

$$.9 = \left(\text{Cos}\left(\frac{5\pi}{36}\right)\text{Cos}\left(\frac{\pi}{9}\right) - \text{Sin}\left(\frac{5\pi}{36}\right)\text{Sin}\left(\frac{\pi}{9}\right) = \left(\text{Cos}\left(\frac{\pi}{4}\right) = \frac{\sqrt{2}}{2}\right)\right) \qquad .10 = (\text{Sin}(70^o)\,\text{Cos}(20^o) + \text{Cos}(70^o)\,\text{Sin}(20^o) = (\text{Sin}(90^o) = 1))$$

, [:) :(:) :([[M a t h @ M U T]] :) :(:) :(:) :(]

Ans3 =

$$.1 = \left(\text{Cos}(\alpha) = \frac{3\sqrt{5}}{7}\right) \qquad .2 = \left(\text{Sin}(\beta) = -\frac{\sqrt{65}}{9}\right)$$

$$.3 = \left(\text{Tan}(\alpha) = \frac{2\sqrt{5}}{15}\right) \qquad .4 = \left(\text{Sin}(\alpha + \beta) = -\frac{8}{63} - \frac{\sqrt{65}\sqrt{5}}{21}\right)$$

$$.5 = \left(\text{Cos}(\beta - \alpha) = -\frac{4\sqrt{5}}{21} - \frac{2\sqrt{65}}{63}\right) \qquad .6 = \left(\text{Tan}(\alpha - \beta) = \frac{243\sqrt{5}}{230} - \frac{49\sqrt{13}\sqrt{5}}{115}\right)$$

$$.7 = \left(\text{Cos}(2\beta) = \frac{-49}{81}\right) \qquad .8 = \left(\text{Tan}(2\alpha) = \frac{12\sqrt{5}}{41}\right)$$

, *Ans4* =

$$.1 = \left(\text{Cos}(\alpha) = \frac{2\sqrt{10}}{7}\right) \qquad .2 = \left(\text{Sin}(\beta) = \frac{\sqrt{33}}{7}\right)$$

$$.3 = \left(\text{Tan}(\beta) = -\frac{\sqrt{33}}{4}\right) \qquad .4 = \left(\text{Sin}(\beta - \alpha) = \frac{2\sqrt{10}\sqrt{33}}{49} - \frac{12}{49}\right)$$

$$.5 = \left(\text{Cos}(\alpha - \beta) = -\frac{8\sqrt{10}}{49} - \frac{3\sqrt{33}}{49}\right) \qquad .6 = \left(\text{Tan}(\alpha + \beta) = -\frac{6\sqrt{10}}{7} - \frac{4\sqrt{33}}{7}\right)$$

$$.7 = \left(\text{Sin}(2\beta) = -\frac{8\sqrt{33}}{49}\right) \qquad .8 = \left(\text{Tan}(2\alpha) = -\frac{12\sqrt{10}}{31}\right)$$

, [:) :(M a t h @ M U T :) :(]

Ans5 = $(\text{Cos}(31^o) = (\text{Sqrt}(0.7345) = 0.857))$, [M U T]

Ans6 = $(\text{Sin}(4^o) = (\text{Sqrt}(0.0050) = 0.070))$, [M U T]

$$Ans1 = \begin{bmatrix} .1 = \left(\mathrm{Cos}(15^{o}) = \frac{\sqrt{2}}{4} + \frac{\sqrt{2}\sqrt{3}}{4}\right) & .2 = \left(\mathrm{Sin}\left(\frac{7\pi}{12}\right) = \frac{\sqrt{2}}{4} + \frac{\sqrt{2}\sqrt{3}}{4}\right) \\ .3 = \left(\mathrm{Tan}\left(\frac{5\pi}{12}\right) = 2 + \sqrt{3}\right) & .4 = \left(\mathrm{Sin}\left(\frac{13\pi}{12}\right) = \frac{\sqrt{2}}{4} - \frac{\sqrt{2}\sqrt{3}}{4}\right) \\ .5 = (\mathrm{Tan}(165^{o}) = -2 + \sqrt{3}) & .6 = \left(\mathrm{Csc}\left(-\frac{23\pi}{12}\right) = \sqrt{2}\sqrt{3} + \sqrt{2}\right) \\ .7 = \left(\mathrm{Cos}((\text{-}15)^{o}) = \frac{\sqrt{2}}{4} + \frac{\sqrt{2}\sqrt{3}}{4}\right) & .8 = (\mathrm{Sec}((\text{-}195)^{o}) = -\sqrt{2}\sqrt{3} + \sqrt{2}) \end{bmatrix}, \ , \begin{bmatrix} :) \\ :(\\ M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \\ :) \\ :(\end{bmatrix}$$

$$Ans2 = \begin{bmatrix} .1 = \left(1 - 2\,\mathrm{Sin}\left(\frac{\pi}{8}\right)^{2} = \left(\mathrm{Cos}\left(\frac{\pi}{4}\right) = \frac{\sqrt{2}}{2}\right)\right) & .2 = \left(2\,\mathrm{Sin}\left(\frac{\pi}{12}\right)\mathrm{Cos}\left(\frac{\pi}{12}\right) = \left(\mathrm{Sin}\left(\frac{\pi}{6}\right) = \frac{1}{2}\right)\right) \\ .3 = \left(\mathrm{Sin}(85^{o})\,\mathrm{Cos}(25^{o}) - \mathrm{Cos}(85^{o})\,\mathrm{Sin}(25^{o}) = \left(\mathrm{Sin}(60^{o}) = \frac{\sqrt{3}}{2}\right)\right) & .4 = \left(\mathrm{Cos}\left(\frac{5\pi}{9}\right)\mathrm{Cos}\left(\frac{\pi}{18}\right) + \mathrm{Sin}\left(\frac{5\pi}{9}\right)\mathrm{Sin}\left(\frac{\pi}{18}\right) = \left(\mathrm{Cos}\left(\frac{\pi}{2}\right) = 0\right)\right) \\ .5 = \left(\mathrm{Cos}\left(\frac{5\pi}{36}\right)\mathrm{Cos}\left(\frac{\pi}{9}\right) - \mathrm{Sin}\left(\frac{5\pi}{36}\right)\mathrm{Sin}\left(\frac{\pi}{9}\right) = \left(\mathrm{Cos}\left(\frac{\pi}{4}\right) = \frac{\sqrt{2}}{2}\right)\right) & .6 = (\mathrm{Sin}(70^{o})\,\mathrm{Cos}(20^{o}) + \mathrm{Cos}(70^{o})\,\mathrm{Sin}(20^{o}) = (\mathrm{Sin}(90^{o}) = 1)) \\ .7 = \left(\frac{2\,\mathrm{Tan}\left(\frac{\pi}{8}\right)}{1 - \mathrm{Tan}\left(\frac{\pi}{8}\right)^{2}} = \left(\mathrm{Tan}\left(\frac{\pi}{4}\right) = \mathrm{Tan}\left(\frac{\pi}{4}\right)\right)\right) & .8 = \left(\frac{\mathrm{Tan}\left(\frac{5\pi}{36}\right) + \mathrm{Tan}\left(\frac{\pi}{36}\right)}{1 - \mathrm{Tan}\left(\frac{5\pi}{36}\right)\mathrm{Tan}\left(\frac{\pi}{36}\right)} = \left(\mathrm{Tan}\left(\frac{\pi}{6}\right) = \frac{\sqrt{3}}{3}\right)\right) \\ .9 = \left(\mathrm{Cos}(15^{o})^{2} - \mathrm{Sin}(15^{o})^{2} = \left(\mathrm{Cos}(30^{o}) = \frac{\sqrt{3}}{2}\right)\right) & .10 = \left(2\,\mathrm{Cos}(22.5^{o})^{2} - 1 = \left(\mathrm{Cos}(45^{o}) = \frac{\sqrt{2}}{2}\right)\right) \end{bmatrix}, \ , \begin{bmatrix} :) \\ :(\\ :) \\ :(\\ \left[\left[\begin{matrix} M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \end{matrix}\right]\right] \\ :) \\ :(\\ :) \\ :(\\ :) \\ :(\end{bmatrix}$$

$$Ans3 = \begin{bmatrix} .1 = \left(\mathrm{Cos}(\alpha) = \frac{\sqrt{39}}{8}\right) & .2 = \left(\mathrm{Sin}(\beta) = -\frac{\sqrt{5}}{3}\right) \\ .3 = \left(\mathrm{Tan}(\alpha) = \frac{5\sqrt{39}}{39}\right) & .4 = \left(\mathrm{Sin}(\beta - \alpha) = -\frac{\sqrt{39}\sqrt{5}}{24} + \frac{5}{12}\right) \\ .5 = \left(\mathrm{Cos}(\alpha - \beta) = -\frac{\sqrt{39}}{12} - \frac{5\sqrt{5}}{24}\right) & .6 = \left(\mathrm{Tan}(\alpha + \beta) = \frac{45\sqrt{39}}{31} + \frac{128\sqrt{5}}{31}\right) \\ .7 = \left(\mathrm{Sin}(2\beta) = \frac{4\sqrt{5}}{9}\right) & .8 = \left(\mathrm{Tan}(2\alpha) = \frac{5\sqrt{39}}{7}\right) \end{bmatrix}, \ , Ans4 = \begin{bmatrix} .1 = \left(\mathrm{Cos}(\alpha) = -\frac{\sqrt{35}}{6}\right) & .2 = \left(\mathrm{Sin}(\beta) = -\frac{\sqrt{3}}{2}\right) \\ .3 = (\mathrm{Tan}(\beta) = -\sqrt{3}) & .4 = \left(\mathrm{Sin}(\alpha - \beta) = \frac{1}{12} - \frac{\sqrt{3}\sqrt{35}}{12}\right) \\ .5 = \left(\mathrm{Cos}(\beta - \alpha) = -\frac{\sqrt{35}}{12} - \frac{\sqrt{3}}{12}\right) & .6 = \left(\mathrm{Tan}(\alpha + \beta) = -\frac{\sqrt{35}}{8} - \frac{9\sqrt{3}}{8}\right) \\ .7 = \left(\mathrm{Sin}(2\alpha) = -\frac{\sqrt{35}}{18}\right) & .8 = (\mathrm{Tan}(2\beta) = \sqrt{3}) \end{bmatrix}, \ , \begin{bmatrix} :) \\ :(\\ M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \\ :) \\ :(\end{bmatrix}$$

$$Ans5 = (\mathrm{Sin}(5^{o}) = (\mathrm{Sqrt}(0.0075) = 0.087)), \ , \begin{bmatrix} M \\ U \\ T \end{bmatrix}$$

$$Ans6 = (\mathrm{Cos}(23^{o}) = (\mathrm{Sqrt}(0.8475) = 0.921)), \ , \begin{bmatrix} M \\ U \\ T \end{bmatrix}$$

$$Ans1 = \begin{bmatrix} .1 = \left(\mathrm{Cos}(105^o) = \frac{\sqrt{2}}{4} - \frac{\sqrt{2}\sqrt{3}}{4}\right) & .2 = \left(\mathrm{Sin}\left(\frac{\pi}{12}\right) = \frac{\sqrt{2}\sqrt{3}}{4} - \frac{\sqrt{2}}{4}\right) \\ .3 = \left(\mathrm{Tan}\left(\frac{5\pi}{12}\right) = 2 + \sqrt{3}\right) & .4 = \left(\mathrm{Sin}((\text{-}165)^o) = \frac{\sqrt{2}}{4} - \frac{\sqrt{2}\sqrt{3}}{4}\right) \\ .5 = \left(\mathrm{Tan}\left(-\frac{19\pi}{12}\right) = 2 + \sqrt{3}\right) & .6 = \left(\mathrm{Cot}\left(\frac{13\pi}{12}\right) = 2 + \sqrt{3}\right) \\ .7 = \left(\mathrm{Cos}((\text{-}105)^o) = \frac{\sqrt{2}}{4} - \frac{\sqrt{2}\sqrt{3}}{4}\right) & .8 = (\mathrm{Sec}((\text{-}345)^o) = \sqrt{2}\sqrt{3} - \sqrt{2}) \end{bmatrix}, \; , \begin{bmatrix} :) \\ :(\\ M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \\ :) \\ :(\end{bmatrix}$$

$$Ans2 = \begin{bmatrix} .1 = \left(\mathrm{Sin}(25^o)\,\mathrm{Cos}(35^o) + \mathrm{Cos}(25^o)\,\mathrm{Sin}(35^o) = \left(\mathrm{Sin}(60^o) = \frac{\sqrt{3}}{2}\right)\right) & .2 = \left(\mathrm{Cos}\left(\frac{\pi}{36}\right)\mathrm{Cos}\left(\frac{5\pi}{36}\right) - \mathrm{Sin}\left(\frac{\pi}{36}\right)\mathrm{Sin}\left(\frac{5\pi}{36}\right) = \left(\mathrm{Cos}\left(\frac{\pi}{6}\right) = \frac{\sqrt{3}}{2}\right)\right) \\ .3 = \left(\mathrm{Cos}(22.5^o)^2 - \mathrm{Sin}(22.5^o)^2 = \left(\mathrm{Cos}(45^o) = \frac{\sqrt{2}}{2}\right)\right) & .4 = \left(\frac{\mathrm{Tan}\left(\frac{\pi}{9}\right) + \mathrm{Tan}\left(\frac{5\pi}{36}\right)}{1 - \mathrm{Tan}\left(\frac{\pi}{9}\right)\mathrm{Tan}\left(\frac{5\pi}{36}\right)} = \left(\mathrm{Tan}\left(\frac{\pi}{4}\right) = 1\right)\right) \\ .5 = \left(\mathrm{Sin}(57^o)\,\mathrm{Cos}(12^o) - \mathrm{Cos}(57^o)\,\mathrm{Sin}(12^o) = \left(\mathrm{Sin}(45^o) = \frac{\sqrt{2}}{2}\right)\right) & .6 = \left(1 - 2\,\mathrm{Sin}(15^o)^2 = \left(\mathrm{Cos}(30^o) = \frac{\sqrt{3}}{2}\right)\right) \\ .7 = \left(2\,\mathrm{Sin}\left(\frac{\pi}{8}\right)\mathrm{Cos}\left(\frac{\pi}{8}\right) = \left(\mathrm{Sin}\left(\frac{\pi}{4}\right) = \frac{\sqrt{2}}{2}\right)\right) & .8 = \left(\mathrm{Cos}\left(\frac{7\pi}{18}\right)\mathrm{Cos}\left(\frac{\pi}{18}\right) + \mathrm{Sin}\left(\frac{7\pi}{18}\right)\mathrm{Sin}\left(\frac{\pi}{18}\right) = \left(\mathrm{Cos}\left(\frac{\pi}{3}\right) = \frac{1}{2}\right)\right) \\ .9 = \left(2\,\mathrm{Cos}\left(\frac{\pi}{12}\right)^2 - 1 = \left(\mathrm{Cos}\left(\frac{\pi}{6}\right) = \frac{\sqrt{3}}{2}\right)\right) & .10 = \left(\frac{2\,\mathrm{Tan}\left(\frac{\pi}{12}\right)}{1 - \mathrm{Tan}\left(\frac{\pi}{12}\right)^2} = \left(\mathrm{Tan}\left(\frac{\pi}{6}\right) = \mathrm{Tan}\left(\frac{\pi}{6}\right)\right)\right) \end{bmatrix}, \; , \begin{bmatrix} :) \\ :(\\ :) \\ :(\\ \left[\left[\begin{bmatrix} M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \end{bmatrix}\right]\right] \\ :) \\ :(\\ :) \\ :(\\ :) \\ :(\end{bmatrix}$$

$$Ans3 = \begin{bmatrix} .1 = \left(\mathrm{Sin}(\alpha) = \frac{\sqrt{55}}{8}\right) & .2 = \left(\mathrm{Cos}(\beta) = \frac{\sqrt{33}}{7}\right) \\ .3 = \left(\mathrm{Tan}(\alpha) = \frac{\sqrt{55}}{3}\right) & .4 = \left(\mathrm{Sin}(\alpha - \beta) = \frac{\sqrt{55}\sqrt{33}}{56} + \frac{3}{14}\right) \\ .5 = \left(\mathrm{Cos}(\beta - \alpha) = \frac{3\sqrt{33}}{56} - \frac{\sqrt{55}}{14}\right) & .6 = \left(\mathrm{Tan}(\alpha + \beta) = -\frac{147\sqrt{5}\sqrt{11}}{583} + \frac{256\sqrt{3}\sqrt{11}}{583}\right) \\ .7 = \left(\mathrm{Cos}(2\alpha) = \frac{\text{-}23}{32}\right) & .8 = \left(\mathrm{Tan}(2\beta) = -\frac{8\sqrt{33}}{17}\right) \end{bmatrix}, \; , Ans4 = \begin{bmatrix} .1 = \left(\mathrm{Cos}(\alpha) = -\frac{\sqrt{3}}{2}\right) & .2 = \left(\mathrm{Sin}(\beta) = \frac{2\sqrt{10}}{7}\right) \\ .3 = \left(\mathrm{Tan}(\beta) = -\frac{2\sqrt{10}}{3}\right) & .4 = \left(\mathrm{Sin}(\alpha - \beta) = \frac{3}{14} + \frac{\sqrt{3}\sqrt{10}}{7}\right) \\ .5 = \left(\mathrm{Cos}(\beta - \alpha) = \frac{3\sqrt{3}}{14} - \frac{\sqrt{10}}{7}\right) & .6 = \left(\mathrm{Tan}(\alpha + \beta) = -\frac{49\sqrt{3}}{13} + \frac{24\sqrt{10}}{13}\right) \\ .7 = \left(\mathrm{Cos}(2\beta) = \frac{\text{-}31}{49}\right) & .8 = (\mathrm{Tan}(2\alpha) = \sqrt{3}) \end{bmatrix}, \; , \begin{bmatrix} :) \\ :(\\ M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \\ :) \\ :(\end{bmatrix}$$

$$Ans5 = (\mathrm{Sin}(29^o) = (\mathrm{Sqrt}(0.2350) = 0.485)), \; , \begin{bmatrix} M \\ U \\ T \end{bmatrix}$$

$$Ans6 = (\mathrm{Cos}(43^o) = (\mathrm{Sqrt}(0.5350) = 0.731)), \; , \begin{bmatrix} M \\ U \\ T \end{bmatrix}$$

TrigonometryExercise4 Answers for No.645118

$$Ans1 = \begin{bmatrix} .1 = \left(\mathrm{Sin}\left(\frac{\pi}{12}\right) = \frac{\sqrt{2}\sqrt{3}}{4} - \frac{\sqrt{2}}{4}\right) & .2 = \left(\mathrm{Cos}(105^{o}) = \frac{\sqrt{2}}{4} - \frac{\sqrt{2}\sqrt{3}}{4}\right) \\ .3 = \left(\mathrm{Tan}\left(\frac{5\pi}{12}\right) = 2 + \sqrt{3}\right) & .4 = \left(\mathrm{Cot}((-105)^{o}) = 2 - \sqrt{3}\right) \\ .5 = \left(\mathrm{Cos}\left(\frac{11\pi}{12}\right) = -\frac{\sqrt{2}}{4} - \frac{\sqrt{2}\sqrt{3}}{4}\right) & .6 = \left(\mathrm{Tan}\left(-\frac{17\pi}{12}\right) = -2 - \sqrt{3}\right) \\ .7 = \left(\mathrm{Sin}((-165)^{o}) = \frac{\sqrt{2}}{4} - \frac{\sqrt{2}\sqrt{3}}{4}\right) & .8 = \left(\mathrm{Sec}\left(\frac{13\pi}{12}\right) = -\sqrt{2}\sqrt{3} + \sqrt{2}\right) \end{bmatrix}, \; , \begin{bmatrix} :) \\ :(\\ M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \\ :) \\ :(\end{bmatrix}$$

$$Ans2 = \begin{bmatrix} .1 = \left(\frac{\mathrm{Tan}(35^{o}) + \mathrm{Tan}(25^{o})}{1 - \mathrm{Tan}(35^{o})\,\mathrm{Tan}(25^{o})} = (\mathrm{Tan}(60^{o}) = \sqrt{3})\right) & .2 = \left(\mathrm{Sin}\left(\frac{11\pi}{60}\right)\mathrm{Cos}\left(\frac{\pi}{15}\right) + \mathrm{Cos}\left(\frac{11\pi}{60}\right)\mathrm{Sin}\left(\frac{\pi}{15}\right) = \left(\mathrm{Sin}\left(\frac{\pi}{4}\right) = \frac{\sqrt{2}}{2}\right)\right) \\ .3 = \left(2\,\mathrm{Cos}(15^{o})^2 - 1 = \left(\mathrm{Cos}(30^{o}) = \frac{\sqrt{3}}{2}\right)\right) & .4 = \left(\mathrm{Cos}\left(\frac{\pi}{8}\right)^2 - \mathrm{Sin}\left(\frac{\pi}{8}\right)^2 = \left(\mathrm{Cos}\left(\frac{\pi}{4}\right) = \frac{\sqrt{2}}{2}\right)\right) \\ .5 = \left(\frac{\mathrm{Tan}\left(\frac{13\pi}{36}\right) - \mathrm{Tan}\left(\frac{\pi}{9}\right)}{1 + \mathrm{Tan}\left(\frac{13\pi}{36}\right)\mathrm{Tan}\left(\frac{\pi}{9}\right)} = \left(\mathrm{Tan}\left(\frac{\pi}{4}\right) = 1\right)\right) & .6 = \left(1 - 2\,\mathrm{Sin}(22.5^{o})^2 = \left(\mathrm{Cos}(45^{o}) = \frac{\sqrt{2}}{2}\right)\right) \\ .7 = \left(\frac{2\,\mathrm{Tan}(22.5^{o})}{1 - \mathrm{Tan}(22.5^{o})^2} = (\mathrm{Tan}(45^{o}) = 1)\right) & .8 = \left(\mathrm{Sin}\left(\frac{7\pi}{18}\right)\mathrm{Cos}\left(\frac{\pi}{18}\right) - \mathrm{Cos}\left(\frac{7\pi}{18}\right)\mathrm{Sin}\left(\frac{\pi}{18}\right) = \left(\mathrm{Sin}\left(\frac{\pi}{3}\right) = \frac{\sqrt{3}}{2}\right)\right) \\ .9 = \left(2\,\mathrm{Sin}\left(\frac{\pi}{12}\right)\mathrm{Cos}\left(\frac{\pi}{12}\right) = \left(\mathrm{Sin}\left(\frac{\pi}{6}\right) = \frac{1}{2}\right)\right) & .10 = \left(\mathrm{Cos}(105^{o})\,\mathrm{Cos}(15^{o}) + \mathrm{Sin}(105^{o})\,\mathrm{Sin}(15^{o}) = (\mathrm{Cos}(90^{o}) = 0)\right) \end{bmatrix}, \; , \begin{bmatrix} :) \\ :(\\ :) \\ :(\\ \left[\left[\begin{matrix} M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \end{matrix}\right]\right] \\ :) \\ :(\\ :) \\ :(\\ :) \\ :(\end{bmatrix}$$

$$Ans3 = \begin{bmatrix} .1 = \left(\mathrm{Sin}(\alpha) = \frac{\sqrt{3}}{2}\right) & .2 = \left(\mathrm{Cos}(\beta) = \frac{\sqrt{39}}{8}\right) \\ .3 = \left(\mathrm{Tan}(\beta) = -\frac{5\sqrt{39}}{39}\right) & .4 = \left(\mathrm{Sin}(\beta - \alpha) = -\frac{\sqrt{3}\sqrt{39}}{16} - \frac{5}{16}\right) \\ .5 = \left(\mathrm{Cos}(\alpha + \beta) = \frac{\sqrt{39}}{16} + \frac{5\sqrt{3}}{16}\right) & .6 = \left(\mathrm{Tan}(\alpha - \beta) = -\frac{16\sqrt{3}}{9} - \frac{5\sqrt{3}\sqrt{13}}{9}\right) \\ .7 = \left(\mathrm{Sin}(2\beta) = -\frac{5\sqrt{39}}{32}\right) & .8 = \left(\mathrm{Tan}(2\alpha) = -\sqrt{3}\right) \end{bmatrix}, \; , Ans4 = \begin{bmatrix} .1 = \left(\mathrm{Cos}(\alpha) = -\frac{2\sqrt{2}}{3}\right) & .2 = \left(\mathrm{Sin}(\beta) = \frac{\sqrt{7}}{4}\right) \\ .3 = \left(\mathrm{Tan}(\alpha) = \frac{\sqrt{2}}{4}\right) & .4 = \left(\mathrm{Sin}(\alpha + \beta) = \frac{1}{4} - \frac{\sqrt{2}\sqrt{7}}{6}\right) \\ .5 = \left(\mathrm{Cos}(\alpha - \beta) = \frac{\sqrt{2}}{2} - \frac{\sqrt{7}}{12}\right) & .6 = \left(\mathrm{Tan}(\beta - \alpha) = -\frac{27\sqrt{7}}{65} - \frac{32\sqrt{2}}{65}\right) \\ .7 = \left(\mathrm{Sin}(2\alpha) = \frac{4\sqrt{2}}{9}\right) & .8 = \left(\mathrm{Tan}(2\beta) = -3\sqrt{7}\right) \end{bmatrix}, \; , \begin{bmatrix} :) \\ :(\\ M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \\ :) \\ :(\end{bmatrix}$$

$$Ans5 = (\mathrm{Cos}(20^{o}) = (\mathrm{Sqrt}(0.8830) = 0.940)), \; , \begin{bmatrix} M \\ U \\ T \end{bmatrix}$$

$$Ans6 = (\mathrm{Sin}(31^{o}) = (\mathrm{Sqrt}(0.2655) = 0.515)), \; , \begin{bmatrix} M \\ U \\ T \end{bmatrix}$$

$$Ans1 = \begin{bmatrix} .1 = \left(\text{Sin}(105^o) = \frac{\sqrt{2}}{4} + \frac{\sqrt{2}\sqrt{3}}{4}\right) & .2 = \left(\text{Cos}\left(\frac{5\pi}{12}\right) = \frac{\sqrt{2}\sqrt{3}}{4} - \frac{\sqrt{2}}{4}\right) \\ .3 = \left(\text{Tan}\left(\frac{\pi}{12}\right) = 2 - \sqrt{3}\right) & .4 = (\text{Cot}((-105)^o) = 2 - \sqrt{3}) \\ .5 = \left(\text{Sin}\left(-\frac{17\pi}{12}\right) = \frac{\sqrt{2}}{4} + \frac{\sqrt{2}\sqrt{3}}{4}\right) & .6 = \left(\text{Csc}\left(\frac{17\pi}{12}\right) = -\sqrt{2}\sqrt{3} + \sqrt{2}\right) \\ .7 = (\text{Sec}(285^o) = \sqrt{2}\sqrt{3} + \sqrt{2}) & .8 = \left(\text{Cos}(345^o) = \frac{\sqrt{2}}{4} + \frac{\sqrt{2}\sqrt{3}}{4}\right) \end{bmatrix}, \begin{bmatrix} \frac{:)}{:(} \\ M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \\ \frac{:)}{:(} \end{bmatrix}$$

$$Ans2 = \begin{bmatrix} .1 = \left(\text{Sin}\left(\frac{2\pi}{5}\right)\text{Cos}\left(\frac{\pi}{15}\right) - \text{Cos}\left(\frac{2\pi}{5}\right)\text{Sin}\left(\frac{\pi}{15}\right) = \left(\text{Sin}\left(\frac{\pi}{3}\right) = \frac{\sqrt{3}}{2}\right)\right) & .2 = \left(1 - 2\,\text{Sin}(22.5^o)^2 = \left(\text{Cos}(45^o) = \frac{\sqrt{2}}{2}\right)\right) \\ .3 = \left(\text{Cos}\left(\frac{\pi}{12}\right)^2 - \text{Sin}\left(\frac{\pi}{12}\right)^2 = \left(\text{Cos}\left(\frac{\pi}{6}\right) = \frac{\sqrt{3}}{2}\right)\right) & .4 = \left(\frac{\text{Tan}(55^o) - \text{Tan}(10^o)}{1 + \text{Tan}(55^o)\,\text{Tan}(10^o)} = (\text{Tan}(45^o) = 1)\right) \\ .5 = \left(\text{Cos}\left(\frac{11\pi}{18}\right)\text{Cos}\left(\frac{\pi}{9}\right) + \text{Sin}\left(\frac{11\pi}{18}\right)\text{Sin}\left(\frac{\pi}{9}\right) = \left(\text{Cos}\left(\frac{\pi}{2}\right) = 0\right)\right) & .6 = \left(\frac{2\,\text{Tan}\left(\frac{\pi}{12}\right)}{1 - \text{Tan}\left(\frac{\pi}{12}\right)^2} = \left(\text{Tan}\left(\frac{\pi}{6}\right) = \text{Tan}\left(\frac{\pi}{6}\right)\right)\right) \\ .7 = \left(2\,\text{Sin}(15^o)\,\text{Cos}(15^o) = \left(\text{Sin}(30^o) = \frac{1}{2}\right)\right) & .8 = \left(2\,\text{Cos}\left(\frac{\pi}{8}\right)^2 - 1 = \left(\text{Cos}\left(\frac{\pi}{4}\right) = \frac{\sqrt{2}}{2}\right)\right) \\ .9 = \left(\frac{\text{Tan}(15^o) + \text{Tan}(30^o)}{1 - \text{Tan}(15^o)\,\text{Tan}(30^o)} = (\text{Tan}(45^o) = 1)\right) & .10 = \left(\text{Sin}(20^o)\,\text{Cos}(40^o) + \text{Cos}(20^o)\,\text{Sin}(40^o) = \left(\text{Sin}(60^o) = \frac{\sqrt{3}}{2}\right)\right) \end{bmatrix}, \begin{bmatrix} \frac{:)}{:(} \\ \frac{:)}{:(} \\ \left[\left[\begin{matrix} M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \end{matrix}\right]\right] \\ \frac{:)}{:(} \\ \frac{:)}{:(} \\ \frac{:)}{:(} \end{bmatrix}$$

$$Ans3 = \begin{bmatrix} .1 = \left(\text{Sin}(\alpha) = \frac{2\sqrt{14}}{9}\right) & .2 = \left(\text{Cos}(\beta) = -\frac{\sqrt{5}}{3}\right) \\ .3 = \left(\text{Tan}(\alpha) = \frac{2\sqrt{14}}{5}\right) & .4 = \left(\text{Sin}(\alpha+\beta) = -\frac{2\sqrt{14}\sqrt{5}}{27} - \frac{10}{27}\right) \\ .5 = \left(\text{Cos}(\beta-\alpha) = -\frac{5\sqrt{5}}{27} - \frac{4\sqrt{14}}{27}\right) & .6 = \left(\text{Tan}(\alpha-\beta) = -\frac{10\sqrt{14}}{11} + \frac{18\sqrt{5}}{11}\right) \\ .7 = \left(\text{Cos}(2\beta) = \frac{1}{9}\right) & .8 = \left(\text{Tan}(2\alpha) = -\frac{20\sqrt{14}}{31}\right) \end{bmatrix}, \quad Ans4 = \begin{bmatrix} .1 = \left(\text{Sin}(\alpha) = -\frac{2\sqrt{6}}{5}\right) & .2 = \left(\text{Cos}(\beta) = -\frac{\sqrt{35}}{6}\right) \\ .3 = \left(\text{Tan}(\beta) = -\frac{\sqrt{35}}{35}\right) & .4 = \left(\text{Sin}(\beta-\alpha) = \frac{1}{30} - \frac{\sqrt{6}\sqrt{35}}{15}\right) \\ .5 = \left(\text{Cos}(\alpha-\beta) = -\frac{\sqrt{35}}{30} - \frac{\sqrt{6}}{15}\right) & .6 = \left(\text{Tan}(\alpha+\beta) = -\frac{72\sqrt{6}}{11} - \frac{25\sqrt{35}}{11}\right) \\ .7 = \left(\text{Cos}(2\alpha) = \frac{-23}{25}\right) & .8 = \left(\text{Tan}(2\beta) = -\frac{\sqrt{35}}{17}\right) \end{bmatrix}, \begin{bmatrix} \frac{:)}{:(} \\ M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \\ \frac{:)}{:(} \end{bmatrix}$$

$$Ans5 = (\text{Sin}(42^o) = (\text{Sqrt}(0.4475) = 0.669)), \begin{bmatrix} M \\ U \\ T \end{bmatrix}$$

$$Ans6 = (\text{Cos}(16^o) = (\text{Sqrt}(0.9240) = 0.961)), \begin{bmatrix} M \\ U \\ T \end{bmatrix}$$

$$Ans1 = \begin{bmatrix} .1 = \left(\operatorname{Cos}(15^{o}) = \frac{\sqrt{2}}{4} + \frac{\sqrt{2}\sqrt{3}}{4}\right) & .2 = \left(\operatorname{Sin}\left(\frac{7\pi}{12}\right) = \frac{\sqrt{2}}{4} + \frac{\sqrt{2}\sqrt{3}}{4}\right) \\ .3 = (\operatorname{Tan}(75^{o}) = 2 + \sqrt{3}) & .4 = \left(\operatorname{Cot}\left(\frac{13\pi}{12}\right) = 2 + \sqrt{3}\right) \\ .5 = (\operatorname{Tan}((-345)^{o}) = 2 - \sqrt{3}) & .6 = \left(\operatorname{Sin}\left(-\frac{13\pi}{12}\right) = \frac{\sqrt{2}\sqrt{3}}{4} - \frac{\sqrt{2}}{4}\right) \\ .7 = \left(\operatorname{Cos}((-75)^{o}) = \frac{\sqrt{2}\sqrt{3}}{4} - \frac{\sqrt{2}}{4}\right) & .8 = \left(\operatorname{Csc}\left(-\frac{17\pi}{12}\right) = \sqrt{2}\sqrt{3} - \sqrt{2}\right) \end{bmatrix}, \begin{bmatrix} :) \\ :(\\ M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \\ :) \\ :(\end{bmatrix}$$

$$Ans2 = \begin{bmatrix} .1 = \left(\operatorname{Sin}\left(\frac{7\pi}{36}\right)\operatorname{Cos}\left(\frac{\pi}{18}\right) + \operatorname{Cos}\left(\frac{7\pi}{36}\right)\operatorname{Sin}\left(\frac{\pi}{18}\right) = \left(\operatorname{Sin}\left(\frac{\pi}{4}\right) = \frac{\sqrt{2}}{2}\right)\right) & .2 = \left(\frac{\operatorname{Tan}\left(\frac{5\pi}{36}\right) + \operatorname{Tan}\left(\frac{\pi}{36}\right)}{1 - \operatorname{Tan}\left(\frac{5\pi}{36}\right)\operatorname{Tan}\left(\frac{\pi}{36}\right)} = \left(\operatorname{Tan}\left(\frac{\pi}{6}\right) = \frac{\sqrt{3}}{3}\right)\right) \\ .3 = \left(2\operatorname{Cos}(15^{o})^{2} - 1 = \left(\operatorname{Cos}(30^{o}) = \frac{\sqrt{3}}{2}\right)\right) & .4 = \left(\frac{\operatorname{Tan}\left(\frac{4\pi}{9}\right) - \operatorname{Tan}\left(\frac{\pi}{9}\right)}{1 + \operatorname{Tan}\left(\frac{4\pi}{9}\right)\operatorname{Tan}\left(\frac{\pi}{9}\right)} = \left(\operatorname{Tan}\left(\frac{\pi}{3}\right) = \sqrt{3}\right)\right) \\ .5 = \left(\operatorname{Cos}(40^{o})\operatorname{Cos}(10^{o}) + \operatorname{Sin}(40^{o})\operatorname{Sin}(10^{o}) = \left(\operatorname{Cos}(30^{o}) = \frac{\sqrt{3}}{2}\right)\right) & .6 = \left(\operatorname{Cos}(12^{o})\operatorname{Cos}(48^{o}) - \operatorname{Sin}(12^{o})\operatorname{Sin}(48^{o}) = \left(\operatorname{Cos}(60^{o}) = \frac{1}{2}\right)\right) \\ .7 = \left(2\operatorname{Sin}\left(\frac{\pi}{12}\right)\operatorname{Cos}\left(\frac{\pi}{12}\right) = \left(\operatorname{Sin}\left(\frac{\pi}{6}\right) = \frac{1}{2}\right)\right) & .8 = \left(\operatorname{Cos}(22.5^{o})^{2} - \operatorname{Sin}(22.5^{o})^{2} = \left(\operatorname{Cos}(45^{o}) = \frac{\sqrt{2}}{2}\right)\right) \\ .9 = \left(\left(1 - 2\operatorname{Sin}\left(\frac{\pi}{8}\right)^{2} = \left(\operatorname{Cos}\left(\frac{\pi}{4}\right) = \frac{\sqrt{2}}{2}\right)\right)\right) & .10 = \left(\frac{2\operatorname{Tan}\left(\frac{\pi}{12}\right)}{1 - \operatorname{Tan}\left(\frac{\pi}{12}\right)^{2}} = \left(\operatorname{Tan}\left(\frac{\pi}{6}\right) = \operatorname{Tan}\left(\frac{\pi}{6}\right)\right)\right) \end{bmatrix}, \begin{bmatrix} :) \\ :(\\ :) \\ :(\\ \begin{bmatrix}\begin{bmatrix} M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \end{bmatrix}\end{bmatrix} \\ :) \\ :(\\ :) \\ :(\\ :) \\ :(\end{bmatrix}$$

$$Ans3 = \begin{bmatrix} .1 = \left(\operatorname{Sin}(\alpha) = \frac{3\sqrt{5}}{7}\right) & .2 = \left(\operatorname{Cos}(\beta) = -\frac{\sqrt{11}}{6}\right) \\ .3 = \left(\operatorname{Tan}(\beta) = \frac{5\sqrt{11}}{11}\right) & .4 = \left(\operatorname{Sin}(\beta - \alpha) = -\frac{5}{21} + \frac{\sqrt{5}\sqrt{11}}{14}\right) \\ .5 = \left(\operatorname{Cos}(\alpha + \beta) = -\frac{\sqrt{11}}{21} + \frac{5\sqrt{5}}{14}\right) & .6 = \left(\operatorname{Tan}(\alpha - \beta) = -\frac{216\sqrt{5}}{1081} + \frac{245\sqrt{11}}{1081}\right) \\ .7 = \left(\operatorname{Cos}(2\alpha) = \frac{-41}{49}\right) & .8 = \left(\operatorname{Tan}(2\beta) = -\frac{5\sqrt{11}}{7}\right) \end{bmatrix}, \quad Ans4 = \begin{bmatrix} .1 = \left(\operatorname{Cos}(\alpha) = \frac{2\sqrt{6}}{5}\right) & .2 = \left(\operatorname{Sin}(\beta) = \frac{2\sqrt{2}}{3}\right) \\ .3 = \left(\operatorname{Tan}(\alpha) = -\frac{\sqrt{6}}{12}\right) & .4 = \left(\operatorname{Sin}(\alpha - \beta) = \frac{1}{15} - \frac{4\sqrt{6}\sqrt{2}}{15}\right) \\ .5 = \left(\operatorname{Cos}(\beta - \alpha) = -\frac{2\sqrt{6}}{15} - \frac{2\sqrt{2}}{15}\right) & .6 = \left(\operatorname{Tan}(\alpha + \beta) = -\frac{25\sqrt{2}}{8} - \frac{9\sqrt{2}\sqrt{3}}{8}\right) \\ .7 = \left(\operatorname{Sin}(2\alpha) = -\frac{4\sqrt{6}}{25}\right) & .8 = \left(\operatorname{Tan}(2\beta) = \frac{4\sqrt{2}}{7}\right) \end{bmatrix}, \begin{bmatrix} :) \\ :(\\ M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \\ :) \\ :(\end{bmatrix}$$

$$Ans5 = (\operatorname{Sin}(23^{o}) = (\operatorname{Sqrt}(0.1525) = 0.391)), \begin{bmatrix} M \\ U \\ T \end{bmatrix}$$

$$Ans6 = (\operatorname{Cos}(38^{o}) = (\operatorname{Sqrt}(0.6210) = 0.788)), \begin{bmatrix} M \\ U \\ T \end{bmatrix}$$

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$$Ans1 = \begin{bmatrix} .1 = \left(\text{Sin}\left(\frac{\pi}{12}\right) = \frac{\sqrt{2}\sqrt{3}}{4} - \frac{\sqrt{2}}{4}\right) & .2 = \left(\text{Cos}(105^o) = \frac{\sqrt{2}}{4} - \frac{\sqrt{2}\sqrt{3}}{4}\right) \\ .3 = (\text{Tan}(75^o) = 2 + \sqrt{3}) & .4 = (\text{Tan}((-255)^o) = -2 - \sqrt{3}) \\ .5 = \left(\text{Sec}\left(-\frac{5\pi}{12}\right) = \sqrt{2}\sqrt{3} + \sqrt{2}\right) & .6 = \left(\text{Sin}((-195)^o) = \frac{\sqrt{2}\sqrt{3}}{4} - \frac{\sqrt{2}}{4}\right) \\ .7 = \left(\text{Cot}\left(-\frac{\pi}{12}\right) = -2 - \sqrt{3}\right) & .8 = \left(\text{Cos}\left(\frac{11\pi}{12}\right) = -\frac{\sqrt{2}}{4} - \frac{\sqrt{2}\sqrt{3}}{4}\right) \end{bmatrix}, \begin{bmatrix} :) \\ :(\\ M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \\ :) \\ :(\end{bmatrix}$$

$$Ans2 = \begin{bmatrix} .1 = \left(2\,\text{Sin}\left(\frac{\pi}{8}\right)\text{Cos}\left(\frac{\pi}{8}\right) = \left(\text{Sin}\left(\frac{\pi}{4}\right) = \frac{\sqrt{2}}{2}\right)\right) & .2 = \left(\frac{2\,\text{Tan}(22.5^o)}{1 - \text{Tan}(22.5^o)^2} = (\text{Tan}(45^o) = 1)\right) \\ .3 = \left(\text{Cos}\left(\frac{\pi}{36}\right)\text{Cos}\left(\frac{5\pi}{36}\right) - \text{Sin}\left(\frac{\pi}{36}\right)\text{Sin}\left(\frac{5\pi}{36}\right) = \left(\text{Cos}\left(\frac{\pi}{6}\right) = \frac{\sqrt{3}}{2}\right)\right) & .4 = \left(\text{Sin}\left(\frac{17\pi}{30}\right)\text{Cos}\left(\frac{\pi}{15}\right) - \text{Cos}\left(\frac{17\pi}{30}\right)\text{Sin}\left(\frac{\pi}{15}\right) = \left(\text{Sin}\left(\frac{\pi}{2}\right) = 1\right)\right) \\ .5 = \left(\frac{\text{Tan}(35^o) + \text{Tan}(25^o)}{1 - \text{Tan}(35^o)\,\text{Tan}(25^o)} = (\text{Tan}(60^o) = \sqrt{3})\right) & .6 = \left(\frac{\text{Tan}(65^o) - \text{Tan}(20^o)}{1 + \text{Tan}(65^o)\,\text{Tan}(20^o)} = (\text{Tan}(45^o) = 1)\right) \\ .7 = \left(1 - 2\,\text{Sin}(15^o)^2 = \left(\text{Cos}(30^o) = \frac{\sqrt{3}}{2}\right)\right) & .8 = \left(\text{Cos}\left(\frac{\pi}{12}\right)^2 - \text{Sin}\left(\frac{\pi}{12}\right)^2 = \left(\text{Cos}\left(\frac{\pi}{6}\right) = \frac{\sqrt{3}}{2}\right)\right) \\ .9 = \left(\text{Sin}(10^o)\,\text{Cos}(35^o) + \text{Cos}(10^o)\,\text{Sin}(35^o) = \left(\text{Sin}(45^o) = \frac{\sqrt{2}}{2}\right)\right) & .10 = \left(2\,\text{Cos}(22.5^o)^2 - 1 = \left(\text{Cos}(45^o) = \frac{\sqrt{2}}{2}\right)\right) \end{bmatrix}, \begin{bmatrix} :) \\ :(\\ :) \\ :(\\ \begin{bmatrix}\begin{bmatrix} M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \end{bmatrix}\end{bmatrix} \\ :) \\ :(\\ :) \\ :(\\ :) \\ :(\end{bmatrix}$$

$$Ans3 = \begin{bmatrix} .1 = \left(\text{Sin}(\alpha) = \frac{\sqrt{33}}{7}\right) & .2 = \left(\text{Cos}(\beta) = \frac{\sqrt{3}}{2}\right) \\ .3 = \left(\text{Tan}(\beta) = -\frac{\sqrt{3}}{3}\right) & .4 = \left(\text{Sin}(\beta - \alpha) = -\frac{2}{7} - \frac{\sqrt{3}\sqrt{33}}{14}\right) \\ .5 = \left(\text{Cos}(\alpha - \beta) = \frac{2\sqrt{3}}{7} - \frac{\sqrt{33}}{14}\right) & .6 = \left(\text{Tan}(\alpha + \beta) = -\frac{49\sqrt{3}}{15} + \frac{16\sqrt{3}\sqrt{11}}{15}\right) \\ .7 = \left(\text{Sin}(2\alpha) = \frac{8\sqrt{33}}{49}\right) & .8 = (\text{Tan}(2\beta) = -\sqrt{3}) \end{bmatrix}, \quad Ans4 = \begin{bmatrix} .1 = \left(\text{Sin}(\alpha) = \frac{2\sqrt{2}}{3}\right) & .2 = \left(\text{Cos}(\beta) = -\frac{\sqrt{35}}{6}\right) \\ .3 = \left(\text{Tan}(\beta) = \frac{\sqrt{35}}{35}\right) & .4 = \left(\text{Sin}(\alpha - \beta) = -\frac{\sqrt{2}\sqrt{35}}{9} - \frac{1}{18}\right) \\ .5 = \left(\text{Cos}(\alpha + \beta) = \frac{\sqrt{2}}{9} + \frac{\sqrt{35}}{18}\right) & .6 = \left(\text{Tan}(\beta - \alpha) = \frac{8\sqrt{2}}{3} + \frac{\sqrt{35}}{3}\right) \\ .7 = \left(\text{Sin}(2\alpha) = -\frac{4\sqrt{2}}{9}\right) & .8 = \left(\text{Tan}(2\beta) = \frac{\sqrt{35}}{17}\right) \end{bmatrix}, \begin{bmatrix} :) \\ :(\\ M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \\ :) \\ :(\end{bmatrix}$$

$$Ans5 = (\text{Cos}(43^o) = (\text{Sqrt}(0.5350) = 0.731)), \quad , \begin{bmatrix} M \\ U \\ T \end{bmatrix}$$

$$Ans6 = (\text{Sin}(25^o) = (\text{Sqrt}(0.1785) = 0.423)), \quad , \begin{bmatrix} M \\ U \\ T \end{bmatrix}$$

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TrigonometryExercise4 Answers for No.645122

$$Ans1 = \begin{bmatrix} .1 = \left(\operatorname{Sin}\left(\frac{7\pi}{12}\right) = \frac{\sqrt{2}}{4} + \frac{\sqrt{2}\sqrt{3}}{4}\right) & .2 = \left(\operatorname{Cos}(75^{o}) = \frac{\sqrt{2}\sqrt{3}}{4} - \frac{\sqrt{2}}{4}\right) \\ .3 = \left(\operatorname{Tan}\left(\frac{\pi}{12}\right) = 2 - \sqrt{3}\right) & .4 = \left(\operatorname{Sin}((-75)^{o}) = -\frac{\sqrt{2}}{4} - \frac{\sqrt{2}\sqrt{3}}{4}\right) \\ .5 = \left(\operatorname{Sec}\left(-\frac{19\pi}{12}\right) = \sqrt{2}\sqrt{3} + \sqrt{2}\right) & .6 = \left(\operatorname{Tan}\left(\frac{19\pi}{12}\right) = -2 - \sqrt{3}\right) \\ .7 = \left(\operatorname{Cos}((-15)^{o}) = \frac{\sqrt{2}}{4} + \frac{\sqrt{2}\sqrt{3}}{4}\right) & .8 = \left(\operatorname{Cot}((-345)^{o}) = 2 + \sqrt{3}\right) \end{bmatrix}, \begin{bmatrix} :) \\ :(\\ M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \\ :) \\ :(\end{bmatrix}$$

$$Ans2 = \begin{bmatrix} .1 = \left(\operatorname{Sin}\left(\frac{7\pi}{36}\right)\operatorname{Cos}\left(\frac{\pi}{18}\right) + \operatorname{Cos}\left(\frac{7\pi}{36}\right)\operatorname{Sin}\left(\frac{\pi}{18}\right) = \left(\operatorname{Sin}\left(\frac{\pi}{4}\right) = \frac{\sqrt{2}}{2}\right)\right) & .2 = \left(1 - 2\operatorname{Sin}(22.5^{o})^{2} = \left(\operatorname{Cos}(45^{o}) = \frac{\sqrt{2}}{2}\right)\right) \\ .3 = \left(2\operatorname{Cos}(15^{o})^{2} - 1 = \left(\operatorname{Cos}(30^{o}) = \frac{\sqrt{3}}{2}\right)\right) & .4 = \left(\frac{2\operatorname{Tan}\left(\frac{\pi}{12}\right)}{1 - \operatorname{Tan}\left(\frac{\pi}{12}\right)^{2}} = \left(\operatorname{Tan}\left(\frac{\pi}{6}\right) = \operatorname{Tan}\left(\frac{\pi}{6}\right)\right)\right) \\ .5 = \left(\operatorname{Cos}(40^{o})\operatorname{Cos}(20^{o}) - \operatorname{Sin}(40^{o})\operatorname{Sin}(20^{o}) = \left(\operatorname{Cos}(60^{o}) = \frac{1}{2}\right)\right) & .6 = \left(2\operatorname{Sin}\left(\frac{\pi}{12}\right)\operatorname{Cos}\left(\frac{\pi}{12}\right) = \left(\operatorname{Sin}\left(\frac{\pi}{6}\right) = \frac{1}{2}\right)\right) \\ .7 = \left(\operatorname{Sin}\left(\frac{17\pi}{30}\right)\operatorname{Cos}\left(\frac{\pi}{15}\right) - \operatorname{Cos}\left(\frac{17\pi}{30}\right)\operatorname{Sin}\left(\frac{\pi}{15}\right) = \left(\operatorname{Sin}\left(\frac{\pi}{2}\right) = 1\right)\right) & .8 = \left(\frac{\operatorname{Tan}\left(\frac{7\pi}{36}\right) - \operatorname{Tan}\left(\frac{\pi}{36}\right)}{1 + \operatorname{Tan}\left(\frac{7\pi}{36}\right)\operatorname{Tan}\left(\frac{\pi}{36}\right)} = \left(\operatorname{Tan}\left(\frac{\pi}{6}\right) = \frac{\sqrt{3}}{3}\right)\right) \\ .9 = \left(\operatorname{Cos}\left(\frac{\pi}{8}\right)^{2} - \operatorname{Sin}\left(\frac{\pi}{8}\right)^{2} = \left(\operatorname{Cos}\left(\frac{\pi}{4}\right) = \frac{\sqrt{2}}{2}\right)\right) & .10 = \left(\frac{\operatorname{Tan}(10^{o}) + \operatorname{Tan}(20^{o})}{1 - \operatorname{Tan}(10^{o})\operatorname{Tan}(20^{o})} = \left(\operatorname{Tan}(30^{o}) = \frac{\sqrt{3}}{3}\right)\right) \end{bmatrix}, \begin{bmatrix} :) \\ :(\\ :) \\ :(\\ \left[\left[\begin{bmatrix} M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \end{bmatrix}\right]\right] \\ :) \\ :(\\ :) \\ :(\\ :) \\ :(\end{bmatrix}$$

$$Ans3 = \begin{bmatrix} .1 = \left(\operatorname{Sin}(\alpha) = \frac{3}{5}\right) & .2 = \left(\operatorname{Cos}(\beta) = -\frac{2\sqrt{6}}{7}\right) \\ .3 = \left(\operatorname{Tan}(\alpha) = \frac{3}{4}\right) & .4 = \left(\operatorname{Sin}(\alpha + \beta) = -\frac{6\sqrt{6}}{35} + \frac{4}{7}\right) \\ .5 = \left(\operatorname{Cos}(\beta - \alpha) = -\frac{8\sqrt{6}}{35} + \frac{3}{7}\right) & .6 = \left(\operatorname{Tan}(\alpha - \beta) = \frac{196}{53} + \frac{250\sqrt{6}}{159}\right) \\ .7 = \left(\operatorname{Cos}(2\alpha) = \frac{7}{25}\right) & .8 = \left(\operatorname{Tan}(2\beta) = 20\sqrt{6}\right) \end{bmatrix}, \quad Ans4 = \begin{bmatrix} .1 = \left(\operatorname{Sin}(\alpha) = -\frac{\sqrt{3}}{2}\right) & .2 = \left(\operatorname{Cos}(\beta) = \frac{\sqrt{5}}{3}\right) \\ .3 = \left(\operatorname{Tan}(\beta) = -\frac{2\sqrt{5}}{5}\right) & .4 = \left(\operatorname{Sin}(\beta - \alpha) = \frac{1}{3} + \frac{\sqrt{5}\sqrt{3}}{6}\right) \\ .5 = \left(\operatorname{Cos}(\alpha - \beta) = -\frac{\sqrt{5}}{6} + \frac{\sqrt{3}}{3}\right) & .6 = \left(\operatorname{Tan}(\alpha + \beta) = \frac{8\sqrt{5}}{7} - \frac{9\sqrt{3}}{7}\right) \\ .7 = \left(\operatorname{Sin}(2\alpha) = \frac{\sqrt{3}}{2}\right) & .8 = \left(\operatorname{Tan}(2\beta) = -4\sqrt{5}\right) \end{bmatrix}, \begin{bmatrix} :) \\ :(\\ M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \\ :) \\ :(\end{bmatrix}$$

$$Ans5 = \left(\operatorname{Sin}(29^{o}) = \left(\operatorname{Sqrt}(0.2350) = 0.485\right)\right), \begin{bmatrix} M \\ U \\ T \end{bmatrix}$$

$$Ans6 = \left(\operatorname{Cos}(42^{o}) = \left(\operatorname{Sqrt}(0.5525) = 0.743\right)\right), \begin{bmatrix} M \\ U \\ T \end{bmatrix}$$

$$Ans1 = \begin{bmatrix} .1 = \left(\mathrm{Sin}(75^o) = \frac{\sqrt{2}}{4} + \frac{\sqrt{2}\sqrt{3}}{4}\right) & .2 = \left(\mathrm{Cos}\left(\frac{7\pi}{12}\right) = \frac{\sqrt{2}}{4} - \frac{\sqrt{2}\sqrt{3}}{4}\right) \\ .3 = \left(\mathrm{Tan}\left(\frac{\pi}{12}\right) = 2 - \sqrt{3}\right) & .4 = \left(\mathrm{Cot}\left(\frac{19\pi}{12}\right) = -2 + \sqrt{3}\right) \\ .5 = (\mathrm{Tan}(165^o) = -2 + \sqrt{3}) & .6 = (\mathrm{Sec}((-75)^o) = \sqrt{2}\sqrt{3} + \sqrt{2}) \\ .7 = \left(\mathrm{Csc}\left(-\frac{11\pi}{12}\right) = -\sqrt{2}\sqrt{3} - \sqrt{2}\right) & .8 = \left(\mathrm{Cos}\left(-\frac{23\pi}{12}\right) = \frac{\sqrt{2}}{4} + \frac{\sqrt{2}\sqrt{3}}{4}\right) \end{bmatrix}, \begin{bmatrix} :) \\ :(\\ M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \\ :) \\ :(\end{bmatrix}$$

$$Ans2 = \begin{bmatrix} .1 = \left(\mathrm{Cos}\left(\frac{\pi}{12}\right)^2 - \mathrm{Sin}\left(\frac{\pi}{12}\right)^2 = \left(\mathrm{Cos}\left(\frac{\pi}{6}\right) = \frac{\sqrt{3}}{2}\right)\right) & .2 = \left(\mathrm{Sin}(25^o)\,\mathrm{Cos}(20^o) + \mathrm{Cos}(25^o)\,\mathrm{Sin}(20^o) = \left(\mathrm{Sin}(45^o) = \frac{\sqrt{2}}{2}\right)\right) \\ .3 = \left(\mathrm{Cos}\left(\frac{\pi}{36}\right)\mathrm{Cos}\left(\frac{5\pi}{36}\right) - \mathrm{Sin}\left(\frac{\pi}{36}\right)\mathrm{Sin}\left(\frac{5\pi}{36}\right) = \left(\mathrm{Cos}\left(\frac{\pi}{6}\right) = \frac{\sqrt{3}}{2}\right)\right) & .4 = \left(\frac{\mathrm{Tan}\left(\frac{\pi}{9}\right) + \mathrm{Tan}\left(\frac{2\pi}{9}\right)}{1 - \mathrm{Tan}\left(\frac{\pi}{9}\right)\mathrm{Tan}\left(\frac{2\pi}{9}\right)} = \left(\mathrm{Tan}\left(\frac{\pi}{3}\right) = \sqrt{3}\right)\right) \\ .5 = \left(\frac{2\,\mathrm{Tan}\left(\frac{\pi}{12}\right)}{1 - \mathrm{Tan}\left(\frac{\pi}{12}\right)^2} = \left(\mathrm{Tan}\left(\frac{\pi}{6}\right) = \mathrm{Tan}\left(\frac{\pi}{6}\right)\right)\right) & .6 = \left(\frac{\mathrm{Tan}\left(\frac{5\pi}{18}\right) - \mathrm{Tan}\left(\frac{\pi}{9}\right)}{1 + \mathrm{Tan}\left(\frac{5\pi}{18}\right)\mathrm{Tan}\left(\frac{\pi}{9}\right)} = \left(\mathrm{Tan}\left(\frac{\pi}{6}\right) = \frac{\sqrt{3}}{3}\right)\right) \\ .7 = \left(\mathrm{Cos}(85^o)\,\mathrm{Cos}(25^o) + \mathrm{Sin}(85^o)\,\mathrm{Sin}(25^o) = \left(\mathrm{Cos}(60^o) = \frac{1}{2}\right)\right) & .8 = \left(1 - 2\,\mathrm{Sin}(15^o)^2 = \left(\mathrm{Cos}(30^o) = \frac{\sqrt{3}}{2}\right)\right) \\ .9 = \left(2\,\mathrm{Cos}\left(\frac{\pi}{8}\right)^2 - 1 = \left(\mathrm{Cos}\left(\frac{\pi}{4}\right) = \frac{\sqrt{2}}{2}\right)\right) & .10 = \left(2\,\mathrm{Sin}(22.5^o)\,\mathrm{Cos}(22.5^o) = \left(\mathrm{Sin}(45^o) = \frac{\sqrt{2}}{2}\right)\right) \end{bmatrix}, \begin{bmatrix} :) \\ :(\\ :) \\ :(\\ \left[\left[\begin{matrix} M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \end{matrix}\right]\right] \\ :) \\ :(\\ :) \\ :(\\ :) \\ :(\end{bmatrix}$$

$$Ans3 = \begin{bmatrix} .1 = \left(\mathrm{Cos}(\alpha) = \frac{2\sqrt{6}}{7}\right) & .2 = \left(\mathrm{Sin}(\beta) = -\frac{\sqrt{7}}{4}\right) \\ .3 = \left(\mathrm{Tan}(\alpha) = \frac{5\sqrt{6}}{12}\right) & .4 = \left(\mathrm{Sin}(\alpha - \beta) = -\frac{15}{28} + \frac{\sqrt{7}\sqrt{6}}{14}\right) \\ .5 = \left(\mathrm{Cos}(\beta - \alpha) = -\frac{3\sqrt{6}}{14} - \frac{5\sqrt{7}}{28}\right) & .6 = \left(\mathrm{Tan}(\alpha + \beta) = \frac{160\sqrt{6}}{41} + \frac{147\sqrt{7}}{41}\right) \\ .7 = \left(\mathrm{Cos}(2\alpha) = \frac{-1}{49}\right) & .8 = (\mathrm{Tan}(2\beta) = 3\sqrt{7}) \end{bmatrix}, \; Ans4 = \begin{bmatrix} .1 = \left(\mathrm{Sin}(\alpha) = \frac{\sqrt{3}}{2}\right) & .2 = \left(\mathrm{Cos}(\beta) = \frac{2\sqrt{2}}{3}\right) \\ .3 = \left(\mathrm{Tan}(\beta) = -\frac{\sqrt{2}}{4}\right) & .4 = \left(\mathrm{Sin}(\alpha + \beta) = \frac{1}{6} + \frac{\sqrt{2}\sqrt{3}}{3}\right) \\ .5 = \left(\mathrm{Cos}(\beta - \alpha) = -\frac{\sqrt{3}}{6} - \frac{\sqrt{2}}{3}\right) & .6 = \left(\mathrm{Tan}(\alpha - \beta) = -\frac{9\sqrt{3}}{5} + \frac{8\sqrt{2}}{5}\right) \\ .7 = \left(\mathrm{Sin}(2\beta) = -\frac{4\sqrt{2}}{9}\right) & .8 = (\mathrm{Tan}(2\alpha) = \sqrt{3}) \end{bmatrix}, \begin{bmatrix} :) \\ :(\\ M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \\ :) \\ :(\end{bmatrix}$$

$$Ans5 = (\mathrm{Sin}(29^o) = (\mathrm{Sqrt}(0.2350) = 0.485)), \; \begin{bmatrix} M \\ U \\ T \end{bmatrix}$$

$$Ans6 = (\mathrm{Cos}(4^o) = (\mathrm{Sqrt}(0.9950) = 0.998)), \; \begin{bmatrix} M \\ U \\ T \end{bmatrix}$$

$$Ans1 = \begin{bmatrix} .1 = \left(\operatorname{Cos}(105^o) = \frac{\sqrt{2}}{4} - \frac{\sqrt{2}\sqrt{3}}{4}\right) & .2 = \left(\operatorname{Sin}\left(\frac{5\pi}{12}\right) = \frac{\sqrt{2}}{4} + \frac{\sqrt{2}\sqrt{3}}{4}\right) \\ .3 = (\operatorname{Tan}(15^o) = 2 - \sqrt{3}) & .4 = \left(\operatorname{Tan}\left(-\frac{19\pi}{12}\right) = 2 + \sqrt{3}\right) \\ .5 = (\operatorname{Csc}((-75)^o) = -\sqrt{2}\sqrt{3} + \sqrt{2}) & .6 = \left(\operatorname{Sin}((-345)^o) = \frac{\sqrt{2}\sqrt{3}}{4} - \frac{\sqrt{2}}{4}\right) \\ .7 = \left(\operatorname{Cos}\left(\frac{23\pi}{12}\right) = \frac{\sqrt{2}}{4} + \frac{\sqrt{2}\sqrt{3}}{4}\right) & .8 = (\operatorname{Cot}(285^o) = -2 + \sqrt{3}) \end{bmatrix}, \begin{bmatrix} :) \\ :(\\ M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \\ :) \\ :(\end{bmatrix}$$

$$Ans2 = \begin{bmatrix} .1 = \left(\operatorname{Cos}\left(\frac{11\pi}{18}\right)\operatorname{Cos}\left(\frac{\pi}{9}\right) + \operatorname{Sin}\left(\frac{11\pi}{18}\right)\operatorname{Sin}\left(\frac{\pi}{9}\right) = \left(\operatorname{Cos}\left(\frac{\pi}{2}\right) = 0\right)\right) & .2 = \left(\operatorname{Cos}\left(\frac{\pi}{6}\right)\operatorname{Cos}\left(\frac{\pi}{12}\right) - \operatorname{Sin}\left(\frac{\pi}{6}\right)\operatorname{Sin}\left(\frac{\pi}{12}\right) = \left(\operatorname{Cos}\left(\frac{\pi}{4}\right) = \frac{\sqrt{2}}{2}\right)\right) \\ .3 = \left(2\operatorname{Cos}(15^o)^2 - 1 = \left(\operatorname{Cos}(30^o) = \frac{\sqrt{3}}{2}\right)\right) & .4 = \left(\operatorname{Sin}(35^o)\operatorname{Cos}(5^o) - \operatorname{Cos}(35^o)\operatorname{Sin}(5^o) = \left(\operatorname{Sin}(30^o) = \frac{1}{2}\right)\right) \\ .5 = \left(1 - 2\operatorname{Sin}(22.5^o)^2 = \left(\operatorname{Cos}(45^o) = \frac{\sqrt{2}}{2}\right)\right) & .6 = \left(\frac{\operatorname{Tan}\left(\frac{5\pi}{36}\right) + \operatorname{Tan}\left(\frac{7\pi}{36}\right)}{1 - \operatorname{Tan}\left(\frac{5\pi}{36}\right)\operatorname{Tan}\left(\frac{7\pi}{36}\right)} = \left(\operatorname{Tan}\left(\frac{\pi}{3}\right) = \sqrt{3}\right)\right) \\ .7 = \left(\frac{2\operatorname{Tan}(22.5^o)}{1 - \operatorname{Tan}(22.5^o)^2} = (\operatorname{Tan}(45^o) = 1)\right) & .8 = \left(\frac{\operatorname{Tan}(65^o) - \operatorname{Tan}(20^o)}{1 + \operatorname{Tan}(65^o)\operatorname{Tan}(20^o)} = (\operatorname{Tan}(45^o) = 1)\right) \\ .9 = \left(2\operatorname{Sin}\left(\frac{\pi}{8}\right)\operatorname{Cos}\left(\frac{\pi}{8}\right) = \left(\operatorname{Sin}\left(\frac{\pi}{4}\right) = \frac{\sqrt{2}}{2}\right)\right) & .10 = \left(\operatorname{Cos}\left(\frac{\pi}{12}\right)^2 - \operatorname{Sin}\left(\frac{\pi}{12}\right)^2 = \left(\operatorname{Cos}\left(\frac{\pi}{6}\right) = \frac{\sqrt{3}}{2}\right)\right) \end{bmatrix}, \begin{bmatrix} :) \\ :(\\ :) \\ :(\\ \left[\left[\begin{matrix} M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \end{matrix}\right]\right] \\ :) \\ :(\\ :) \\ :(\\ :) \\ :(\end{bmatrix}$$

$$Ans3 = \begin{bmatrix} .1 = \left(\operatorname{Sin}(\alpha) = \frac{\sqrt{33}}{7}\right) & .2 = \left(\operatorname{Cos}(\beta) = \frac{\sqrt{55}}{8}\right) \\ .3 = \left(\operatorname{Tan}(\beta) = -\frac{3\sqrt{55}}{55}\right) & .4 = \left(\operatorname{Sin}(\beta - \alpha) = -\frac{3}{14} - \frac{\sqrt{55}\sqrt{33}}{56}\right) \\ .5 = \left(\operatorname{Cos}(\alpha + \beta) = \frac{\sqrt{55}}{14} + \frac{3\sqrt{33}}{56}\right) & .6 = \left(\operatorname{Tan}(\alpha - \beta) = \frac{256\sqrt{3}\sqrt{11}}{583} + \frac{147\sqrt{5}\sqrt{11}}{583}\right) \\ .7 = \left(\operatorname{Cos}(2\beta) = \frac{23}{32}\right) & .8 = \left(\operatorname{Tan}(2\alpha) = -\frac{8\sqrt{33}}{17}\right) \end{bmatrix}, \quad Ans4 = \begin{bmatrix} .1 = \left(\operatorname{Cos}(\alpha) = -\frac{2\sqrt{10}}{7}\right) & .2 = \left(\operatorname{Sin}(\beta) = -\frac{\sqrt{3}}{2}\right) \\ .3 = (\operatorname{Tan}(\beta) = \sqrt{3}) & .4 = \left(\operatorname{Sin}(\alpha + \beta) = -\frac{3}{14} + \frac{\sqrt{3}\sqrt{10}}{7}\right) \\ .5 = \left(\operatorname{Cos}(\beta - \alpha) = \frac{\sqrt{10}}{7} - \frac{3\sqrt{3}}{14}\right) & .6 = \left(\operatorname{Tan}(\alpha - \beta) = -\frac{24\sqrt{10}}{13} - \frac{49\sqrt{3}}{13}\right) \\ .7 = \left(\operatorname{Cos}(2\alpha) = \frac{31}{49}\right) & .8 = (\operatorname{Tan}(2\beta) = -\sqrt{3}) \end{bmatrix}, \begin{bmatrix} :) \\ :(\\ M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \\ :) \\ :(\end{bmatrix}$$

$$Ans5 = (\operatorname{Sin}(12^o) = (\operatorname{Sqrt}(0.0430) = 0.208)), \begin{bmatrix} M \\ U \\ T \end{bmatrix}$$

$$Ans6 = (\operatorname{Cos}(31^o) = (\operatorname{Sqrt}(0.7345) = 0.857)), \begin{bmatrix} M \\ U \\ T \end{bmatrix}$$

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TrigonometryExercise4 Answers for No.645125

$$Ans1 = \begin{bmatrix} .1 = \left(\mathrm{Sin}(75^o) = \frac{\sqrt{2}}{4} + \frac{\sqrt{2}\sqrt{3}}{4}\right) & .2 = \left(\mathrm{Cos}\left(\frac{7\pi}{12}\right) = \frac{\sqrt{2}}{4} - \frac{\sqrt{2}\sqrt{3}}{4}\right) \\ .3 = (\mathrm{Tan}(15^o) = 2 - \sqrt{3}) & .4 = \left(\mathrm{Cos}((-195)^o) = -\frac{\sqrt{2}}{4} - \frac{\sqrt{2}\sqrt{3}}{4}\right) \\ .5 = \left(\mathrm{Cot}\left(-\frac{19\pi}{12}\right) = 2 - \sqrt{3}\right) & .6 = \left(\mathrm{Csc}\left(-\frac{7\pi}{12}\right) = -\sqrt{2}\sqrt{3} + \sqrt{2}\right) \\ .7 = (\mathrm{Sec}((-165)^o) = -\sqrt{2}\sqrt{3} + \sqrt{2}) & .8 = \left(\mathrm{Sin}(195^o) = \frac{\sqrt{2}}{4} - \frac{\sqrt{2}\sqrt{3}}{4}\right) \end{bmatrix}, \begin{bmatrix} :) \\ :(\\ M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \\ :) \\ :(\end{bmatrix}$$

$$Ans2 = \begin{bmatrix} .1 = \left(\mathrm{Cos}\left(\frac{2\pi}{9}\right)\mathrm{Cos}\left(\frac{\pi}{18}\right) + \mathrm{Sin}\left(\frac{2\pi}{9}\right)\mathrm{Sin}\left(\frac{\pi}{18}\right) = \left(\mathrm{Cos}\left(\frac{\pi}{6}\right) = \frac{\sqrt{3}}{2}\right)\right) & .2 = \left(\frac{\mathrm{Tan}(12^o) + \mathrm{Tan}(33^o)}{1 - \mathrm{Tan}(12^o)\,\mathrm{Tan}(33^o)} = (\mathrm{Tan}(45^o) = 1)\right) \\ .3 = \left(\mathrm{Sin}\left(\frac{\pi}{18}\right)\mathrm{Cos}\left(\frac{\pi}{9}\right) + \mathrm{Cos}\left(\frac{\pi}{18}\right)\mathrm{Sin}\left(\frac{\pi}{9}\right) = \left(\mathrm{Sin}\left(\frac{\pi}{6}\right) = \frac{1}{2}\right)\right) & .4 = \left(\frac{\mathrm{Tan}(60^o) - \mathrm{Tan}(15^o)}{1 + \mathrm{Tan}(60^o)\,\mathrm{Tan}(15^o)} = (\mathrm{Tan}(45^o) = 1)\right) \\ .5 = \left(1 - 2\,\mathrm{Sin}(15^o)^2 = \left(\mathrm{Cos}(30^o) = \frac{\sqrt{3}}{2}\right)\right) & .6 = \left(\frac{2\,\mathrm{Tan}(15^o)}{1 - \mathrm{Tan}(15^o)^2} = \left(\mathrm{Tan}(30^o) = \frac{\sqrt{3}}{3}\right)\right) \\ .7 = \left(2\,\mathrm{Cos}(22.5^o)^2 - 1 = \left(\mathrm{Cos}(45^o) = \frac{\sqrt{2}}{2}\right)\right) & .8 = \left(\mathrm{Cos}\left(\frac{\pi}{12}\right)^2 - \mathrm{Sin}\left(\frac{\pi}{12}\right)^2 = \left(\mathrm{Cos}\left(\frac{\pi}{6}\right) = \frac{\sqrt{3}}{2}\right)\right) \\ .9 = \left(\mathrm{Cos}(35^o)\,\mathrm{Cos}(25^o) - \mathrm{Sin}(35^o)\,\mathrm{Sin}(25^o) = \left(\mathrm{Cos}(60^o) = \frac{1}{2}\right)\right) & .10 = \left(2\,\mathrm{Sin}\left(\frac{\pi}{8}\right)\mathrm{Cos}\left(\frac{\pi}{8}\right) = \left(\mathrm{Sin}\left(\frac{\pi}{4}\right) = \frac{\sqrt{2}}{2}\right)\right) \end{bmatrix}, \begin{bmatrix} :) \\ :(\\ :) \\ :(\\ \left[\begin{bmatrix} M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \end{bmatrix}\right] \\ :) \\ :(\\ :) \\ :(\\ :) \\ :(\end{bmatrix}$$

$$Ans3 = \begin{bmatrix} .1 = \left(\mathrm{Sin}(\alpha) = \frac{\sqrt{35}}{6}\right) & .2 = \left(\mathrm{Cos}(\beta) = -\frac{\sqrt{15}}{4}\right) \\ .3 = \left(\mathrm{Tan}(\beta) = -\frac{\sqrt{15}}{15}\right) & .4 = \left(\mathrm{Sin}(\alpha+\beta) = -\frac{\sqrt{35}\sqrt{15}}{24} + \frac{1}{24}\right) \\ .5 = \left(\mathrm{Cos}(\beta-\alpha) = -\frac{\sqrt{15}}{24} + \frac{\sqrt{35}}{24}\right) & .6 = \left(\mathrm{Tan}(\alpha-\beta) = -\frac{4\sqrt{5}\sqrt{7}}{5} - \frac{9\sqrt{5}\sqrt{3}}{5}\right) \\ .7 = \left(\mathrm{Cos}(2\alpha) = \frac{-17}{18}\right) & .8 = \left(\mathrm{Tan}(2\beta) = -\frac{\sqrt{15}}{7}\right) \end{bmatrix}, \; Ans4 = \begin{bmatrix} .1 = \left(\mathrm{Cos}(\alpha) = \frac{\sqrt{15}}{4}\right) & .2 = \left(\mathrm{Sin}(\beta) = -\frac{\sqrt{3}}{2}\right) \\ .3 = (\mathrm{Tan}(\beta) = \sqrt{3}) & .4 = \left(\mathrm{Sin}(\alpha-\beta) = \frac{1}{8} + \frac{\sqrt{15}\sqrt{3}}{8}\right) \\ .5 = \left(\mathrm{Cos}(\alpha+\beta) = -\frac{\sqrt{15}}{8} - \frac{\sqrt{3}}{8}\right) & .6 = \left(\mathrm{Tan}(\beta-\alpha) = \frac{4\sqrt{3}}{3} + \frac{\sqrt{5}\sqrt{3}}{3}\right) \\ .7 = \left(\mathrm{Cos}(2\beta) = \frac{-1}{2}\right) & .8 = \left(\mathrm{Tan}(2\alpha) = -\frac{\sqrt{15}}{7}\right) \end{bmatrix}, \begin{bmatrix} :) \\ :(\\ M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \\ :) \\ :(\end{bmatrix}$$

$$Ans5 = (\mathrm{Cos}(16^o) = (\mathrm{Sqrt}(0.9240) = 0.961)), \; \begin{bmatrix} M \\ U \\ T \end{bmatrix}$$

$$Ans6 = (\mathrm{Sin}(35^o) = (\mathrm{Sqrt}(0.3290) = 0.574)), \; \begin{bmatrix} M \\ U \\ T \end{bmatrix}$$

$$Ans1 = \begin{bmatrix} .1 = \left(\operatorname{Sin}\left(\frac{\pi}{12}\right) = \frac{\sqrt{2}\sqrt{3}}{4} - \frac{\sqrt{2}}{4}\right) & .2 = \left(\operatorname{Cos}(75^{o}) = \frac{\sqrt{2}\sqrt{3}}{4} - \frac{\sqrt{2}}{4}\right) \\ .3 = (\operatorname{Tan}(105^{o}) = -2 - \sqrt{3}) & .4 = \left(\operatorname{Cos}((-255)^{o}) = \frac{\sqrt{2}}{4} - \frac{\sqrt{2}\sqrt{3}}{4}\right) \\ .5 = \left(\operatorname{Sin}\left(\frac{11\,\pi}{12}\right) = \frac{\sqrt{2}\sqrt{3}}{4} - \frac{\sqrt{2}}{4}\right) & .6 = (\operatorname{Csc}((-195)^{o}) = \sqrt{2}\sqrt{3} + \sqrt{2}) \\ .7 = \left(\operatorname{Tan}\left(\frac{13\,\pi}{12}\right) = 2 - \sqrt{3}\right) & .8 = (\operatorname{Cot}((-165)^{o}) = 2 + \sqrt{3}) \end{bmatrix}, \begin{bmatrix} :) \\ :(\\ M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \\ :) \\ :(\end{bmatrix}$$

$$Ans2 = \begin{bmatrix} .1 = \left(\frac{2\operatorname{Tan}\left(\frac{\pi}{12}\right)}{1 - \operatorname{Tan}\left(\frac{\pi}{12}\right)^{2}} = \left(\operatorname{Tan}\left(\frac{\pi}{6}\right) = \operatorname{Tan}\left(\frac{\pi}{6}\right)\right)\right) & .2 = \left(1 - 2\operatorname{Sin}(15^{o})^{2} = \left(\operatorname{Cos}(30^{o}) = \frac{\sqrt{3}}{2}\right)\right) \\ .3 = \left(2\operatorname{Sin}\left(\frac{\pi}{8}\right)\operatorname{Cos}\left(\frac{\pi}{8}\right) = \left(\operatorname{Sin}\left(\frac{\pi}{4}\right) = \frac{\sqrt{2}}{2}\right)\right) & .4 = \left(\frac{\operatorname{Tan}(72^{o}) - \operatorname{Tan}(12^{o})}{1 + \operatorname{Tan}(72^{o})\operatorname{Tan}(12^{o})} = (\operatorname{Tan}(60^{o}) = \sqrt{3})\right) \\ .5 = \left(2\operatorname{Cos}\left(\frac{\pi}{12}\right)^{2} - 1 = \left(\operatorname{Cos}\left(\frac{\pi}{6}\right) = \frac{\sqrt{3}}{2}\right)\right) & .6 = \left(\operatorname{Cos}\left(\frac{7\,\pi}{36}\right)\operatorname{Cos}\left(\frac{\pi}{18}\right) - \operatorname{Sin}\left(\frac{7\,\pi}{36}\right)\operatorname{Sin}\left(\frac{\pi}{18}\right) = \left(\operatorname{Cos}\left(\frac{\pi}{4}\right) = \frac{\sqrt{2}}{2}\right)\right) \\ .7 = \left(\operatorname{Cos}\left(\frac{19\,\pi}{60}\right)\operatorname{Cos}\left(\frac{\pi}{15}\right) + \operatorname{Sin}\left(\frac{19\,\pi}{60}\right)\operatorname{Sin}\left(\frac{\pi}{15}\right) = \left(\operatorname{Cos}\left(\frac{\pi}{4}\right) = \frac{\sqrt{2}}{2}\right)\right) & .8 = \left(\operatorname{Sin}(5^{o})\operatorname{Cos}(25^{o}) + \operatorname{Cos}(5^{o})\operatorname{Sin}(25^{o}) = \left(\operatorname{Sin}(30^{o}) = \frac{1}{2}\right)\right) \\ .9 = \left(\operatorname{Cos}(22.5^{o})^{2} - \operatorname{Sin}(22.5^{o})^{2} = \left(\operatorname{Cos}(45^{o}) = \frac{\sqrt{2}}{2}\right)\right) & .10 = \left(\operatorname{Sin}\left(\frac{5\,\pi}{18}\right)\operatorname{Cos}\left(\frac{\pi}{9}\right) - \operatorname{Cos}\left(\frac{5\,\pi}{18}\right)\operatorname{Sin}\left(\frac{\pi}{9}\right) = \left(\operatorname{Sin}\left(\frac{\pi}{6}\right) = \frac{1}{2}\right)\right) \end{bmatrix}, \begin{bmatrix} :) \\ :(\\ :) \\ :(\\ \begin{bmatrix}\begin{bmatrix} M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \end{bmatrix}\end{bmatrix} \\ :) \\ :(\\ :) \\ :(\\ :) \\ :(\end{bmatrix}$$

$$Ans3 = \begin{bmatrix} .1 = \left(\operatorname{Cos}(\alpha) = \frac{3}{5}\right) & .2 = \left(\operatorname{Sin}(\beta) = -\frac{2\sqrt{6}}{5}\right) \\ .3 = (\operatorname{Tan}(\beta) = 2\sqrt{6}) & .4 = \left(\operatorname{Sin}(\beta - \alpha) = -\frac{6\sqrt{6}}{25} + \frac{4}{25}\right) \\ .5 = \left(\operatorname{Cos}(\alpha - \beta) = -\frac{3}{25} - \frac{8\sqrt{6}}{25}\right) & .6 = \left(\operatorname{Tan}(\alpha + \beta) = -\frac{4}{5} - \frac{2\sqrt{6}}{15}\right) \\ .7 = \left(\operatorname{Sin}(2\,\alpha) = \frac{24}{25}\right) & .8 = \left(\operatorname{Tan}(2\,\beta) = -\frac{4\sqrt{6}}{23}\right) \end{bmatrix}, \quad Ans4 = \begin{bmatrix} .1 = \left(\operatorname{Cos}(\alpha) = \frac{\sqrt{55}}{8}\right) & .2 = \left(\operatorname{Sin}(\beta) = \frac{\sqrt{15}}{4}\right) \\ .3 = (\operatorname{Tan}(\beta) = -\sqrt{15}) & .4 = \left(\operatorname{Sin}(\beta - \alpha) = -\frac{3}{32} + \frac{\sqrt{55}\sqrt{15}}{32}\right) \\ .5 = \left(\operatorname{Cos}(\alpha - \beta) = -\frac{\sqrt{55}}{32} - \frac{3\sqrt{15}}{32}\right) & .6 = \left(\operatorname{Tan}(\alpha + \beta) = \frac{3\sqrt{5}\sqrt{11}}{5} + \frac{4\sqrt{5}\sqrt{3}}{5}\right) \\ .7 = \left(\operatorname{Cos}(2\,\alpha) = \frac{23}{32}\right) & .8 = \left(\operatorname{Tan}(2\,\beta) = \frac{\sqrt{15}}{7}\right) \end{bmatrix}, \begin{bmatrix} :) \\ :(\\ M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \\ :) \\ :(\end{bmatrix}$$

$$Ans5 = (\operatorname{Cos}(34^{o}) = (\operatorname{Sqrt}(0.6875) = 0.829)), \quad \begin{bmatrix} M \\ U \\ T \end{bmatrix}$$

$$Ans6 = (\operatorname{Sin}(22^{o}) = (\operatorname{Sqrt}(0.1405) = 0.375)), \quad \begin{bmatrix} M \\ U \\ T \end{bmatrix}$$

$$Ans1 = \begin{bmatrix} .1 = \left(\mathrm{Cos}(75^{o}) = \frac{\sqrt{2}\sqrt{3}}{4} - \frac{\sqrt{2}}{4}\right) & .2 = \left(\mathrm{Sin}\left(\frac{\pi}{12}\right) = \frac{\sqrt{2}\sqrt{3}}{4} - \frac{\sqrt{2}}{4}\right) \\ .3 = (\mathrm{Tan}(105^{o}) = -2 - \sqrt{3}) & .4 = \left(\mathrm{Tan}\left(-\frac{7\pi}{12}\right) = 2 + \sqrt{3}\right) \\ .5 = \left(\mathrm{Cos}(255^{o}) = \frac{\sqrt{2}}{4} - \frac{\sqrt{2}\sqrt{3}}{4}\right) & .6 = \left(\mathrm{Sin}\left(-\frac{5\pi}{12}\right) = -\frac{\sqrt{2}}{4} - \frac{\sqrt{2}\sqrt{3}}{4}\right) \\ .7 = (\mathrm{Cot}((-285)^{o}) = 2 - \sqrt{3}) & .8 = (\mathrm{Sec}((-15)^{o}) = \sqrt{2}\sqrt{3} - \sqrt{2}) \end{bmatrix},$$

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$$Ans2 = \begin{bmatrix} .1 = \left(\frac{\mathrm{Tan}\left(\frac{11\pi}{36}\right) - \mathrm{Tan}\left(\frac{\pi}{18}\right)}{1 + \mathrm{Tan}\left(\frac{11\pi}{36}\right)\mathrm{Tan}\left(\frac{\pi}{18}\right)} = \left(\mathrm{Tan}\left(\frac{\pi}{4}\right) = 1\right)\right) & .2 = \left(1 - 2\,\mathrm{Sin}(15^{o})^{2} = \left(\mathrm{Cos}(30^{o}) = \frac{\sqrt{3}}{2}\right)\right) \\ .3 = \left(2\,\mathrm{Sin}\left(\frac{\pi}{8}\right)\mathrm{Cos}\left(\frac{\pi}{8}\right) = \left(\mathrm{Sin}\left(\frac{\pi}{4}\right) = \frac{\sqrt{2}}{2}\right)\right) & .4 = \left(\frac{2\,\mathrm{Tan}(22.5^{o})}{1 - \mathrm{Tan}(22.5^{o})^{2}} = (\mathrm{Tan}(45^{o}) = 1)\right) \\ .5 = \left(\mathrm{Cos}(22.5^{o})^{2} - \mathrm{Sin}(22.5^{o})^{2} = \left(\mathrm{Cos}(45^{o}) = \frac{\sqrt{2}}{2}\right)\right) & .6 = \left(\mathrm{Sin}(72^{o})\,\mathrm{Cos}(12^{o}) - \mathrm{Cos}(72^{o})\,\mathrm{Sin}(12^{o}) = \left(\mathrm{Sin}(60^{o}) = \frac{\sqrt{3}}{2}\right)\right) \\ .7 = \left(\mathrm{Cos}\left(\frac{5\pi}{18}\right)\mathrm{Cos}\left(\frac{\pi}{18}\right) - \mathrm{Sin}\left(\frac{5\pi}{18}\right)\mathrm{Sin}\left(\frac{\pi}{18}\right) = \left(\mathrm{Cos}\left(\frac{\pi}{3}\right) = \frac{1}{2}\right)\right) & .8 = \left(\frac{\mathrm{Tan}\left(\frac{\pi}{15}\right) + \mathrm{Tan}\left(\frac{11\pi}{60}\right)}{1 - \mathrm{Tan}\left(\frac{\pi}{15}\right)\mathrm{Tan}\left(\frac{11\pi}{60}\right)} = \left(\mathrm{Tan}\left(\frac{\pi}{4}\right) = 1\right)\right) \\ .9 = \left(\mathrm{Cos}(50^{o})\,\mathrm{Cos}(20^{o}) + \mathrm{Sin}(50^{o})\,\mathrm{Sin}(20^{o}) = \left(\mathrm{Cos}(30^{o}) = \frac{\sqrt{3}}{2}\right)\right) & .10 = \left(2\,\mathrm{Cos}\left(\frac{\pi}{12}\right)^{2} - 1 = \left(\mathrm{Cos}\left(\frac{\pi}{6}\right) = \frac{\sqrt{3}}{2}\right)\right) \end{bmatrix},$$

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$$Ans3 = \begin{bmatrix} .1 = \left(\mathrm{Sin}(\alpha) = \frac{\sqrt{33}}{7}\right) & .2 = \left(\mathrm{Cos}(\beta) = \frac{-3}{5}\right) \\ .3 = \left(\mathrm{Tan}(\alpha) = \frac{\sqrt{33}}{4}\right) & .4 = \left(\mathrm{Sin}(\beta - \alpha) = -\frac{16}{35} + \frac{3\sqrt{33}}{35}\right) \\ .5 = \left(\mathrm{Cos}(\alpha + \beta) = -\frac{12}{35} + \frac{4\sqrt{33}}{35}\right) & .6 = \left(\mathrm{Tan}(\alpha - \beta) = -\frac{25\sqrt{33}}{96} + \frac{49}{32}\right) \\ .7 = \left(\mathrm{Sin}(2\alpha) = \frac{8\sqrt{33}}{49}\right) & .8 = \left(\mathrm{Tan}(2\beta) = \frac{-24}{7}\right) \end{bmatrix},$$

$$Ans4 = \begin{bmatrix} .1 = \left(\mathrm{Sin}(\alpha) = -\frac{2\sqrt{10}}{7}\right) & .2 = \left(\mathrm{Cos}(\beta) = -\frac{\sqrt{15}}{4}\right) \\ .3 = \left(\mathrm{Tan}(\beta) = -\frac{\sqrt{15}}{15}\right) & .4 = \left(\mathrm{Sin}(\alpha + \beta) = \frac{\sqrt{10}\sqrt{15}}{14} + \frac{3}{28}\right) \\ .5 = \left(\mathrm{Cos}(\alpha - \beta) = -\frac{3\sqrt{15}}{28} - \frac{\sqrt{10}}{14}\right) & .6 = \left(\mathrm{Tan}(\beta - \alpha) = -\frac{49\sqrt{5}\sqrt{3}}{95} + \frac{96\sqrt{5}\sqrt{2}}{95}\right) \\ .7 = \left(\mathrm{Cos}(2\alpha) = \frac{-31}{49}\right) & .8 = \left(\mathrm{Tan}(2\beta) = -\frac{\sqrt{15}}{7}\right) \end{bmatrix},$$

:) :(M a t h @ M U T :) :(

$$Ans5 = (\mathrm{Sin}(29^{o}) = (\mathrm{Sqrt}(0.2350) = 0.485)), \quad \begin{bmatrix} M \\ U \\ T \end{bmatrix}$$

$$Ans6 = (\mathrm{Cos}(14^{o}) = (\mathrm{Sqrt}(0.9415) = 0.970)), \quad \begin{bmatrix} M \\ U \\ T \end{bmatrix}$$

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$$Ans1 = \begin{bmatrix} .1 = \left(\text{Cos}\left(\frac{5\pi}{12}\right) = \frac{\sqrt{2}\sqrt{3}}{4} - \frac{\sqrt{2}}{4}\right) & .2 = \left(\text{Sin}(15^o) = \frac{\sqrt{2}\sqrt{3}}{4} - \frac{\sqrt{2}}{4}\right) \\ .3 = (\text{Tan}(105^o) = -2 - \sqrt{3}) & .4 = (\text{Cot}((-75)^o) = -2 + \sqrt{3}) \\ .5 = \left(\text{Sec}\left(-\frac{17\pi}{12}\right) = -\sqrt{2}\sqrt{3} - \sqrt{2}\right) & .6 = (\text{Tan}((-345)^o) = 2 - \sqrt{3}) \\ .7 = \left(\text{Cos}\left(\frac{19\pi}{12}\right) = \frac{\sqrt{2}\sqrt{3}}{4} - \frac{\sqrt{2}}{4}\right) & .8 = (\text{Csc}(195^o) = -\sqrt{2}\sqrt{3} - \sqrt{2}) \end{bmatrix}, \begin{bmatrix} :) \\ :(\\ M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \\ :) \\ :(\end{bmatrix}$$

$$Ans2 = \begin{bmatrix} .1 = (\text{Sin}(80^o)\,\text{Cos}(10^o) + \text{Cos}(80^o)\,\text{Sin}(10^o) = (\text{Sin}(90^o) = 1)) & .2 = \left(2\,\text{Sin}\left(\frac{\pi}{12}\right)\text{Cos}\left(\frac{\pi}{12}\right) = \left(\text{Sin}\left(\frac{\pi}{6}\right) = \frac{1}{2}\right)\right) \\ .3 = \left(\text{Sin}\left(\frac{2\pi}{5}\right)\text{Cos}\left(\frac{\pi}{15}\right) - \text{Cos}\left(\frac{2\pi}{5}\right)\text{Sin}\left(\frac{\pi}{15}\right) = \left(\text{Sin}\left(\frac{\pi}{3}\right) = \frac{\sqrt{3}}{2}\right)\right) & .4 = (\text{Cos}(102^o)\,\text{Cos}(12^o) + \text{Sin}(102^o)\,\text{Sin}(12^o) = (\text{Cos}(90^o) = 0)) \\ .5 = \left(\frac{\text{Tan}(12^o) + \text{Tan}(48^o)}{1 - \text{Tan}(12^o)\,\text{Tan}(48^o)} = (\text{Tan}(60^o) = \sqrt{3})\right) & .6 = \left(\frac{\text{Tan}\left(\frac{5\pi}{18}\right) - \text{Tan}\left(\frac{\pi}{9}\right)}{1 + \text{Tan}\left(\frac{5\pi}{18}\right)\text{Tan}\left(\frac{\pi}{9}\right)} = \left(\text{Tan}\left(\frac{\pi}{6}\right) = \frac{\sqrt{3}}{3}\right)\right) \\ .7 = \left(\text{Cos}(22.5^o)^2 - \text{Sin}(22.5^o)^2 = \left(\text{Cos}(45^o) = \frac{\sqrt{2}}{2}\right)\right) & .8 = \left(2\,\text{Cos}\left(\frac{\pi}{8}\right)^2 - 1 = \left(\text{Cos}\left(\frac{\pi}{4}\right) = \frac{\sqrt{2}}{2}\right)\right) \\ .9 = \left(\frac{2\,\text{Tan}(22.5^o)}{1 - \text{Tan}(22.5^o)^2} = (\text{Tan}(45^o) = 1)\right) & .10 = \left(1 - 2\,\text{Sin}(15^o)^2 = \left(\text{Cos}(30^o) = \frac{\sqrt{3}}{2}\right)\right) \end{bmatrix}, \begin{bmatrix} :) \\ :(\\ :) \\ :(\\ \begin{bmatrix}\begin{bmatrix} M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \end{bmatrix}\end{bmatrix} \\ :) \\ :(\\ :) \\ :(\\ :) \\ :(\end{bmatrix}$$

$$Ans3 = \begin{bmatrix} .1 = \left(\text{Sin}(\alpha) = \frac{\sqrt{5}}{3}\right) & .2 = \left(\text{Cos}(\beta) = \frac{\sqrt{21}}{5}\right) \\ .3 = \left(\text{Tan}(\alpha) = \frac{\sqrt{5}}{2}\right) & .4 = \left(\text{Sin}(\beta - \alpha) = -\frac{4}{15} - \frac{\sqrt{5}\sqrt{21}}{15}\right) \\ .5 = \left(\text{Cos}(\alpha + \beta) = \frac{2\sqrt{21}}{15} + \frac{2\sqrt{5}}{15}\right) & .6 = \left(\text{Tan}(\alpha - \beta) = \frac{25\sqrt{5}}{32} + \frac{9\sqrt{21}}{32}\right) \\ .7 = \left(\text{Sin}(2\alpha) = \frac{4\sqrt{5}}{9}\right) & .8 = \left(\text{Tan}(2\beta) = -\frac{4\sqrt{21}}{17}\right) \end{bmatrix}, \quad Ans4 = \begin{bmatrix} .1 = \left(\text{Sin}(\alpha) = -\frac{2\sqrt{2}}{3}\right) & .2 = \left(\text{Cos}(\beta) = -\frac{\sqrt{3}}{2}\right) \\ .3 = (\text{Tan}(\alpha) = 2\sqrt{2}) & .4 = \left(\text{Sin}(\beta - \alpha) = -\frac{1}{6} - \frac{\sqrt{2}\sqrt{3}}{3}\right) \\ .5 = \left(\text{Cos}(\alpha - \beta) = \frac{\sqrt{3}}{6} - \frac{\sqrt{2}}{3}\right) & .6 = \left(\text{Tan}(\alpha + \beta) = -\frac{8\sqrt{2}}{5} + \frac{9\sqrt{3}}{5}\right) \\ .7 = \left(\text{Cos}(2\alpha) = \frac{-7}{9}\right) & .8 = (\text{Tan}(2\beta) = -\sqrt{3}) \end{bmatrix}, \begin{bmatrix} :) \\ :(\\ M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \\ :) \\ :(\end{bmatrix}$$

$$Ans5 = (\text{Cos}(34^o) = (\text{Sqrt}(0.6875) = 0.829)), \quad \begin{bmatrix} M \\ U \\ T \end{bmatrix}$$

$$Ans6 = (\text{Sin}(4^o) = (\text{Sqrt}(0.0050) = 0.070)), \quad \begin{bmatrix} M \\ U \\ T \end{bmatrix}$$

$$Ans1 = \begin{bmatrix} .1 = \left(\mathrm{Cos}(15^o) = \frac{\sqrt{2}}{4} + \frac{\sqrt{2}\sqrt{3}}{4}\right) & .2 = \left(\mathrm{Sin}\left(\frac{5\pi}{12}\right) = \frac{\sqrt{2}}{4} + \frac{\sqrt{2}\sqrt{3}}{4}\right) \\ .3 = \left(\mathrm{Tan}\left(\frac{7\pi}{12}\right) = -2 - \sqrt{3}\right) & .4 = (\mathrm{Cot}((-255)^o) = -2 + \sqrt{3}) \\ .5 = \left(\mathrm{Csc}\left(-\frac{\pi}{12}\right) = -\sqrt{2}\sqrt{3} - \sqrt{2}\right) & .6 = (\mathrm{Sec}((-105)^o) = -\sqrt{2}\sqrt{3} - \sqrt{2}) \\ .7 = \left(\mathrm{Sin}\left(-\frac{13\pi}{12}\right) = \frac{\sqrt{2}\sqrt{3}}{4} - \frac{\sqrt{2}}{4}\right) & .8 = (\mathrm{Tan}((-75)^o) = -2 - \sqrt{3}) \end{bmatrix}, \begin{bmatrix} :) \\ :(\\ M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \\ :) \\ :(\end{bmatrix}$$

$$Ans2 = \begin{bmatrix} .1 = \left(2\,\mathrm{Sin}\left(\frac{\pi}{12}\right)\mathrm{Cos}\left(\frac{\pi}{12}\right) = \left(\mathrm{Sin}\left(\frac{\pi}{6}\right) = \frac{1}{2}\right)\right) & .2 = \left(\mathrm{Cos}\left(\frac{5\pi}{36}\right)\mathrm{Cos}\left(\frac{\pi}{9}\right) - \mathrm{Sin}\left(\frac{5\pi}{36}\right)\mathrm{Sin}\left(\frac{\pi}{9}\right) = \left(\mathrm{Cos}\left(\frac{\pi}{4}\right) = \frac{\sqrt{2}}{2}\right)\right) \\ .3 = \left(1 - 2\,\mathrm{Sin}(15^o)^2 = \left(\mathrm{Cos}(30^o) = \frac{\sqrt{3}}{2}\right)\right) & .4 = \left(\mathrm{Sin}\left(\frac{13\pi}{36}\right)\mathrm{Cos}\left(\frac{\pi}{9}\right) - \mathrm{Cos}\left(\frac{13\pi}{36}\right)\mathrm{Sin}\left(\frac{\pi}{9}\right) = \left(\mathrm{Sin}\left(\frac{\pi}{4}\right) = \frac{\sqrt{2}}{2}\right)\right) \\ .5 = \left(\frac{2\,\mathrm{Tan}(22.5^o)}{1 - \mathrm{Tan}(22.5^o)^2} = (\mathrm{Tan}(45^o) = 1)\right) & .6 = \left(\frac{\mathrm{Tan}\left(\frac{2\pi}{5}\right) - \mathrm{Tan}\left(\frac{\pi}{15}\right)}{1 + \mathrm{Tan}\left(\frac{2\pi}{5}\right)\mathrm{Tan}\left(\frac{\pi}{15}\right)} = \left(\mathrm{Tan}\left(\frac{\pi}{3}\right) = \sqrt{3}\right)\right) \\ .7 = \left(2\,\mathrm{Cos}\left(\frac{\pi}{8}\right)^2 - 1 = \left(\mathrm{Cos}\left(\frac{\pi}{4}\right) = \frac{\sqrt{2}}{2}\right)\right) & .8 = \left(\mathrm{Cos}(42^o)\mathrm{Cos}(12^o) + \mathrm{Sin}(42^o)\mathrm{Sin}(12^o) = \left(\mathrm{Cos}(30^o) = \frac{\sqrt{3}}{2}\right)\right) \\ .9 = \left(\frac{\mathrm{Tan}(20^o) + \mathrm{Tan}(40^o)}{1 - \mathrm{Tan}(20^o)\mathrm{Tan}(40^o)} = (\mathrm{Tan}(60^o) = \sqrt{3})\right) & .10 = \left(\mathrm{Cos}(22.5^o)^2 - \mathrm{Sin}(22.5^o)^2 = \left(\mathrm{Cos}(45^o) = \frac{\sqrt{2}}{2}\right)\right) \end{bmatrix}, \begin{bmatrix} :) \\ :(\\ :) \\ :(\\ \left[\left[\begin{bmatrix} M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \end{bmatrix}\right]\right] \\ :) \\ :(\\ :) \\ :(\\ :) \\ :(\end{bmatrix}$$

$$Ans3 = \begin{bmatrix} .1 = \left(\mathrm{Cos}(\alpha) = \frac{3}{5}\right) & .2 = \left(\mathrm{Sin}(\beta) = -\frac{\sqrt{7}}{4}\right) \\ .3 = \left(\mathrm{Tan}(\beta) = \frac{\sqrt{7}}{3}\right) & .4 = \left(\mathrm{Sin}(\alpha + \beta) = -\frac{3}{5} - \frac{3\sqrt{7}}{20}\right) \\ .5 = \left(\mathrm{Cos}(\alpha - \beta) = -\frac{9}{20} - \frac{\sqrt{7}}{5}\right) & .6 = \left(\mathrm{Tan}(\beta - \alpha) = -\frac{75\sqrt{7}}{31} + \frac{192}{31}\right) \\ .7 = \left(\mathrm{Cos}(2\beta) = \frac{1}{8}\right) & .8 = \left(\mathrm{Tan}(2\alpha) = \frac{-24}{7}\right) \end{bmatrix}, Ans4 = \begin{bmatrix} .1 = \left(\mathrm{Sin}(\alpha) = -\frac{\sqrt{3}}{2}\right) & .2 = \left(\mathrm{Cos}(\beta) = \frac{-4}{5}\right) \\ .3 = \left(\mathrm{Tan}(\beta) = \frac{-3}{4}\right) & .4 = \left(\mathrm{Sin}(\beta - \alpha) = \frac{3}{10} - \frac{2\sqrt{3}}{5}\right) \\ .5 = \left(\mathrm{Cos}(\alpha + \beta) = -\frac{2}{5} + \frac{3\sqrt{3}}{10}\right) & .6 = \left(\mathrm{Tan}(\alpha - \beta) = \frac{25\sqrt{3}}{11} - \frac{48}{11}\right) \\ .7 = \left(\mathrm{Sin}(2\alpha) = -\frac{\sqrt{3}}{2}\right) & .8 = \left(\mathrm{Tan}(2\beta) = \frac{-24}{7}\right) \end{bmatrix}, \begin{bmatrix} :) \\ :(\\ M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \\ :) \\ :(\end{bmatrix}$$

$$Ans5 = (\mathrm{Cos}(3^o) = (\mathrm{Sqrt}(0.9975) = 0.999)), \begin{bmatrix} M \\ U \\ T \end{bmatrix}$$

$$Ans6 = (\mathrm{Sin}(25^o) = (\mathrm{Sqrt}(0.1785) = 0.423)), \begin{bmatrix} M \\ U \\ T \end{bmatrix}$$

TrigonometryExercise4 Answers for No.645130

$$Ans1 = \begin{bmatrix} .1 = \left(\text{Cos}(75^o) = \frac{\sqrt{2}\sqrt{3}}{4} - \frac{\sqrt{2}}{4}\right) & .2 = \left(\text{Sin}\left(\frac{7\pi}{12}\right) = \frac{\sqrt{2}}{4} + \frac{\sqrt{2}\sqrt{3}}{4}\right) \\ .3 = \left(\text{Tan}\left(\frac{\pi}{12}\right) = 2 - \sqrt{3}\right) & .4 = \left(\text{Csc}\left(\frac{11\pi}{12}\right) = \sqrt{2}\sqrt{3} + \sqrt{2}\right) \\ .5 = (\text{Cot}((-345)^o) = 2 + \sqrt{3}) & .6 = \left(\text{Sin}((-75)^o) = -\frac{\sqrt{2}}{4} - \frac{\sqrt{2}\sqrt{3}}{4}\right) \\ .7 = \left(\text{Tan}\left(-\frac{7\pi}{12}\right) = 2 + \sqrt{3}\right) & .8 = \left(\text{Cos}((-255)^o) = \frac{\sqrt{2}}{4} - \frac{\sqrt{2}\sqrt{3}}{4}\right) \end{bmatrix}, \ , \begin{bmatrix} :) \\ :(\\ M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \\ :) \\ :(\end{bmatrix}$$

$$Ans2 = \begin{bmatrix} .1 = \left(2\,\text{Sin}\left(\frac{\pi}{12}\right)\text{Cos}\left(\frac{\pi}{12}\right) = \left(\text{Sin}\left(\frac{\pi}{6}\right) = \frac{1}{2}\right)\right) & .2 = \left(\frac{2\,\text{Tan}(15^o)}{1 - \text{Tan}(15^o)^2} = \left(\text{Tan}(30^o) = \frac{\sqrt{3}}{3}\right)\right) \\ .3 = \left(\text{Sin}(12^o)\,\text{Cos}(18^o) + \text{Cos}(12^o)\,\text{Sin}(18^o) = \left(\text{Sin}(30^o) = \frac{1}{2}\right)\right) & .4 = \left(\frac{\text{Tan}\left(\frac{\pi}{18}\right) + \text{Tan}\left(\frac{7\pi}{36}\right)}{1 - \text{Tan}\left(\frac{\pi}{18}\right)\text{Tan}\left(\frac{7\pi}{36}\right)} = \left(\text{Tan}\left(\frac{\pi}{4}\right) = 1\right)\right) \\ .5 = \left(\text{Cos}\left(\frac{7\pi}{36}\right)\text{Cos}\left(\frac{5\pi}{36}\right) - \text{Sin}\left(\frac{7\pi}{36}\right)\text{Sin}\left(\frac{5\pi}{36}\right) = \left(\text{Cos}\left(\frac{\pi}{3}\right) = \frac{1}{2}\right)\right) & .6 = \left(\text{Cos}\left(\frac{\pi}{8}\right)^2 - \text{Sin}\left(\frac{\pi}{8}\right)^2 = \left(\text{Cos}\left(\frac{\pi}{4}\right) = \frac{\sqrt{2}}{2}\right)\right) \\ .7 = \left(2\,\text{Cos}(22.5^o)^2 - 1 = \left(\text{Cos}(45^o) = \frac{\sqrt{2}}{2}\right)\right) & .8 = \left(\frac{\text{Tan}\left(\frac{\pi}{3}\right) - \text{Tan}\left(\frac{\pi}{12}\right)}{1 + \text{Tan}\left(\frac{\pi}{3}\right)\text{Tan}\left(\frac{\pi}{12}\right)} = \left(\text{Tan}\left(\frac{\pi}{4}\right) = 1\right)\right) \\ .9 = \left(\text{Cos}(70^o)\,\text{Cos}(10^o) + \text{Sin}(70^o)\,\text{Sin}(10^o) = \left(\text{Cos}(60^o) = \frac{1}{2}\right)\right) & .10 = \left(1 - 2\,\text{Sin}(15^o)^2 = \left(\text{Cos}(30^o) = \frac{\sqrt{3}}{2}\right)\right) \end{bmatrix}, \ , \begin{bmatrix} :) \\ :(\\ :) \\ :(\\ \left[\left[\begin{matrix} M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \end{matrix}\right]\right] \\ :) \\ :(\\ :) \\ :(\\ :) \\ :(\end{bmatrix}$$

$$Ans3 = \begin{bmatrix} .1 = \left(\text{Sin}(\alpha) = \frac{\sqrt{3}}{2}\right) & .2 = \left(\text{Cos}(\beta) = -\frac{2\sqrt{6}}{7}\right) \\ .3 = \left(\text{Tan}(\beta) = -\frac{5\sqrt{6}}{12}\right) & .4 = \left(\text{Sin}(\beta - \alpha) = \frac{5}{14} + \frac{\sqrt{6}\sqrt{3}}{7}\right) \\ .5 = \left(\text{Cos}(\alpha + \beta) = -\frac{5\sqrt{3}}{14} - \frac{\sqrt{6}}{7}\right) & .6 = \left(\text{Tan}(\alpha - \beta) = -\frac{40\sqrt{2}\sqrt{3}}{51} - \frac{49\sqrt{3}}{51}\right) \\ .7 = \left(\text{Sin}(2\alpha) = \frac{\sqrt{3}}{2}\right) & .8 = (\text{Tan}(2\beta) = 20\sqrt{6}) \end{bmatrix}, \ , \ Ans4 = \begin{bmatrix} .1 = \left(\text{Cos}(\alpha) = -\frac{\sqrt{11}}{6}\right) & .2 = \left(\text{Sin}(\beta) = -\frac{\sqrt{21}}{5}\right) \\ .3 = \left(\text{Tan}(\alpha) = \frac{5\sqrt{11}}{11}\right) & .4 = \left(\text{Sin}(\alpha - \beta) = -\frac{1}{3} - \frac{\sqrt{21}\sqrt{11}}{30}\right) \\ .5 = \left(\text{Cos}(\alpha + \beta) = -\frac{\sqrt{11}}{15} - \frac{\sqrt{21}}{6}\right) & .6 = \left(\text{Tan}(\beta - \alpha) = \frac{72\sqrt{21}}{481} + \frac{125\sqrt{11}}{481}\right) \\ .7 = \left(\text{Sin}(2\alpha) = \frac{5\sqrt{11}}{18}\right) & .8 = \left(\text{Tan}(2\beta) = \frac{4\sqrt{21}}{17}\right) \end{bmatrix}, \ , \begin{bmatrix} :) \\ :(\\ M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \\ :) \\ :(\end{bmatrix}$$

$$Ans5 = (\text{Sin}(7^o) = (\text{Sqrt}(0.0150) = 0.122)), \ , \begin{bmatrix} M \\ U \\ T \end{bmatrix}$$

$$Ans6 = (\text{Cos}(33^o) = (\text{Sqrt}(0.7035) = 0.839)), \ , \begin{bmatrix} M \\ U \\ T \end{bmatrix}$$

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