TrigonometryExercise4 Answers for No.9844

$$Ans1 = \begin{bmatrix} .1 = \left(\mathrm{Sin}\left(\frac{7\pi}{12}\right) = \frac{\sqrt{2}}{4} + \frac{\sqrt{2}\sqrt{3}}{4}\right) & .2 = \left(\mathrm{Cos}(15^{o}) = \frac{\sqrt{2}}{4} + \frac{\sqrt{2}\sqrt{3}}{4}\right) \\ .3 = \left(\mathrm{Tan}\left(\frac{5\pi}{12}\right) = 2 + \sqrt{3}\right) & .4 = (\mathrm{Csc}((-165)^{o}) = -\sqrt{2}\sqrt{3} - \sqrt{2}) \\ .5 = \left(\mathrm{Sec}\left(\frac{11\pi}{12}\right) = -\sqrt{2}\sqrt{3} + \sqrt{2}\right) & .6 = (\mathrm{Cot}((-105)^{o}) = 2 - \sqrt{3}) \\ .7 = \left(\mathrm{Sin}\left(\frac{23\pi}{12}\right) = \frac{\sqrt{2}}{4} - \frac{\sqrt{2}\sqrt{3}}{4}\right) & .8 = (\mathrm{Tan}((-15)^{o}) = -2 + \sqrt{3}) \end{bmatrix}, \quad , \begin{bmatrix} :) \\ :(\\ M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \\ :) \\ :(\end{bmatrix}$$

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

$$Ans3 = \begin{bmatrix} .1 = \left(\mathrm{Sin}(\alpha) = \frac{2\sqrt{14}}{9}\right) & .2 = \left(\mathrm{Cos}(\beta) = -\frac{\sqrt{39}}{8}\right) \\ .3 = \left(\mathrm{Tan}(\beta) = \frac{5\sqrt{39}}{39}\right) & .4 = \left(\mathrm{Sin}(\beta - \alpha) = -\frac{25}{72} + \frac{\sqrt{14}\sqrt{39}}{36}\right) \\ .5 = \left(\mathrm{Cos}(\alpha + \beta) = -\frac{5\sqrt{39}}{72} + \frac{5\sqrt{14}}{36}\right) & .6 = \left(\mathrm{Tan}(\alpha - \beta) = -\frac{128\sqrt{14}}{85} + \frac{81\sqrt{39}}{85}\right) \\ .7 = \left(\mathrm{Cos}(2\alpha) = \frac{-31}{81}\right) & .8 = \left(\mathrm{Tan}(2\beta) = \frac{5\sqrt{39}}{7}\right) \end{bmatrix}, \quad , Ans4 = \begin{bmatrix} .1 = \left(\mathrm{Cos}(\alpha) = \frac{\sqrt{5}}{3}\right) & .2 = \left(\mathrm{Sin}(\beta) = \frac{\sqrt{3}}{2}\right) \\ .3 = \left(\mathrm{Tan}(\alpha) = -\frac{2\sqrt{5}}{5}\right) & .4 = \left(\mathrm{Sin}(\beta - \alpha) = \frac{\sqrt{5}\sqrt{3}}{6} - \frac{1}{3}\right) \\ .5 = \left(\mathrm{Cos}(\alpha - \beta) = -\frac{\sqrt{3}}{3} - \frac{\sqrt{5}}{6}\right) & .6 = \left(\mathrm{Tan}(\alpha + \beta) = \frac{8\sqrt{5}}{7} + \frac{9\sqrt{3}}{7}\right) \\ .7 = \left(\mathrm{Cos}(2\alpha) = \frac{1}{9}\right) & .8 = (\mathrm{Tan}(2\beta) = \sqrt{3}) \end{bmatrix}, \quad , \begin{bmatrix} :) \\ :(\\ M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \\ :) \\ :(\end{bmatrix}$$

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

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

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$$Ans1 = \begin{bmatrix} .1 = \left(\mathrm{Cos}\left(\frac{5\pi}{12}\right) = \frac{\sqrt{2}\sqrt{3}}{4} - \frac{\sqrt{2}}{4}\right) & .2 = \left(\mathrm{Sin}(15^{o}) = \frac{\sqrt{2}\sqrt{3}}{4} - \frac{\sqrt{2}}{4}\right) \\ .3 = \left(\mathrm{Tan}\left(\frac{7\pi}{12}\right) = -2 - \sqrt{3}\right) & .4 = \left(\mathrm{Tan}\left(-\frac{23\pi}{12}\right) = 2 - \sqrt{3}\right) \\ .5 = \left(\mathrm{Sin}((-195)^{o}) = \frac{\sqrt{2}\sqrt{3}}{4} - \frac{\sqrt{2}}{4}\right) & .6 = \left(\mathrm{Sec}(345^{o}) = \sqrt{2}\sqrt{3} - \sqrt{2}\right) \\ .7 = \left(\mathrm{Cos}\left(-\frac{17\pi}{12}\right) = \frac{\sqrt{2}}{4} - \frac{\sqrt{2}\sqrt{3}}{4}\right) & .8 = \left(\mathrm{Csc}((-165)^{o}) = -\sqrt{2}\sqrt{3} - \sqrt{2}\right) \end{bmatrix}, \; , \begin{bmatrix} :) \\ :(\\ M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \\ :) \\ :(\end{bmatrix}$$

$$Ans2 = \begin{bmatrix} .1 = \left(\mathrm{Sin}\left(\frac{7\pi}{18}\right)\mathrm{Cos}\left(\frac{\pi}{18}\right) - \mathrm{Cos}\left(\frac{7\pi}{18}\right)\mathrm{Sin}\left(\frac{\pi}{18}\right) = \left(\mathrm{Sin}\left(\frac{\pi}{3}\right) = \frac{\sqrt{3}}{2}\right)\right) & .2 = \left(\left(1 - 2\,\mathrm{Sin}\left(\frac{\pi}{12}\right)^{2}\right) = \left(\mathrm{Cos}\left(\frac{\pi}{6}\right) = \frac{\sqrt{3}}{2}\right)\right) \\ .3 = \left(\mathrm{Cos}(20^{o})\,\mathrm{Cos}(25^{o}) - \mathrm{Sin}(20^{o})\,\mathrm{Sin}(25^{o}) = \left(\mathrm{Cos}(45^{o}) = \frac{\sqrt{2}}{2}\right)\right) & .4 = \left(2\,\mathrm{Sin}(15^{o})\,\mathrm{Cos}(15^{o}) = \left(\mathrm{Sin}(30^{o}) = \frac{1}{2}\right)\right) \\ .5 = \left(\mathrm{Cos}\left(\frac{\pi}{8}\right)^{2} - \mathrm{Sin}\left(\frac{\pi}{8}\right)^{2} = \left(\mathrm{Cos}\left(\frac{\pi}{4}\right) = \frac{\sqrt{2}}{2}\right)\right) & .6 = \left(2\,\mathrm{Cos}(22.5^{o})^{2} - 1 = \left(\mathrm{Cos}(45^{o}) = \frac{\sqrt{2}}{2}\right)\right) \\ .7 = \left(\mathrm{Sin}\left(\frac{\pi}{18}\right)\mathrm{Cos}\left(\frac{\pi}{9}\right) + \mathrm{Cos}\left(\frac{\pi}{18}\right)\mathrm{Sin}\left(\frac{\pi}{9}\right) = \left(\mathrm{Sin}\left(\frac{\pi}{6}\right) = \frac{1}{2}\right)\right) & .8 = \left(\mathrm{Cos}\left(\frac{5\pi}{9}\right)\mathrm{Cos}\left(\frac{\pi}{18}\right) + \mathrm{Sin}\left(\frac{5\pi}{9}\right)\mathrm{Sin}\left(\frac{\pi}{18}\right) = \left(\mathrm{Cos}\left(\frac{\pi}{2}\right) = 0\right)\right) \\ .9 = \left(\frac{2\,\mathrm{Tan}(22.5^{o})}{1 - \mathrm{Tan}(22.5^{o})^{2}} = (\mathrm{Tan}(45^{o}) = 1)\right) & .10 = \left(\frac{\mathrm{Tan}(10^{o}) + \mathrm{Tan}(50^{o})}{1 - \mathrm{Tan}(10^{o})\,\mathrm{Tan}(50^{o})} = (\mathrm{Tan}(60^{o}) = \sqrt{3})\right) \end{bmatrix}, \; , \begin{bmatrix} :) \\ :(\\ :) \\ :(\\ \left[\left[\begin{matrix} M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \end{matrix}\right]\right] \\ :) \\ :(\\ :) \\ :(\\ :) \\ :(\end{bmatrix}$$

$$Ans3 = \begin{bmatrix} .1 = \left(\mathrm{Sin}(\alpha) = \frac{\sqrt{65}}{9}\right) & .2 = \left(\mathrm{Cos}(\beta) = -\frac{\sqrt{5}}{3}\right) \\ .3 = \left(\mathrm{Tan}(\beta) = -\frac{2\sqrt{5}}{5}\right) & .4 = \left(\mathrm{Sin}(\alpha - \beta) = -\frac{\sqrt{65}\sqrt{5}}{27} - \frac{8}{27}\right) \\ .5 = \left(\mathrm{Cos}(\alpha + \beta) = -\frac{4\sqrt{5}}{27} - \frac{2\sqrt{65}}{27}\right) & .6 = \left(\mathrm{Tan}(\beta - \alpha) = \frac{9\sqrt{5}}{10} + \frac{\sqrt{5}\sqrt{13}}{5}\right) \\ .7 = \left(\mathrm{Sin}(2\beta) = -\frac{4\sqrt{5}}{9}\right) & .8 = \left(\mathrm{Tan}(2\alpha) = -\frac{8\sqrt{65}}{49}\right) \end{bmatrix}, \; , \; Ans4 = \begin{bmatrix} .1 = \left(\mathrm{Cos}(\alpha) = \frac{3}{5}\right) & .2 = \left(\mathrm{Sin}(\beta) = -\frac{2\sqrt{14}}{9}\right) \\ .3 = \left(\mathrm{Tan}(\beta) = \frac{2\sqrt{14}}{5}\right) & .4 = \left(\mathrm{Sin}(\alpha + \beta) = \frac{4}{9} - \frac{2\sqrt{14}}{15}\right) \\ .5 = \left(\mathrm{Cos}(\beta - \alpha) = -\frac{1}{3} + \frac{8\sqrt{14}}{45}\right) & .6 = \left(\mathrm{Tan}(\alpha - \beta) = \frac{972}{671} + \frac{250\sqrt{14}}{671}\right) \\ .7 = \left(\mathrm{Cos}(2\beta) = \frac{-31}{81}\right) & .8 = \left(\mathrm{Tan}(2\alpha) = \frac{24}{7}\right) \end{bmatrix}, \; , \begin{bmatrix} :) \\ :(\\ M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \\ :) \\ :(\end{bmatrix}$$

$$Ans5 = (\mathrm{Sin}(28^{o}) = (\mathrm{Sqrt}(0.2205) = 0.469)), \; , \begin{bmatrix} M \\ U \\ T \end{bmatrix}$$

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

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$$Ans1 = \left[\begin{array}{cc} .1 = \left(\mathrm{Cos}(75^o) = \frac{\sqrt{2}\sqrt{3}}{4} - \frac{\sqrt{2}}{4}\right) & .2 = \left(\mathrm{Sin}\left(\frac{7\pi}{12}\right) = \frac{\sqrt{2}}{4} + \frac{\sqrt{2}\sqrt{3}}{4}\right) \\ .3 = (\mathrm{Tan}(15^o) = 2 - \sqrt{3}) & .4 = \left(\mathrm{Cos}\left(-\frac{\pi}{12}\right) = \frac{\sqrt{2}}{4} + \frac{\sqrt{2}\sqrt{3}}{4}\right) \\ .5 = \left(\mathrm{Sin}((-285)^o) = \frac{\sqrt{2}}{4} + \frac{\sqrt{2}\sqrt{3}}{4}\right) & .6 = (\mathrm{Sec}(345^o) = \sqrt{2}\sqrt{3} - \sqrt{2}) \\ .7 = \left(\mathrm{Cot}\left(-\frac{13\pi}{12}\right) = -2 - \sqrt{3}\right) & .8 = \left(\mathrm{Csc}\left(\frac{13\pi}{12}\right) = -\sqrt{2}\sqrt{3} - \sqrt{2}\right) \end{array}\right], \left[\begin{array}{c} :) \\ :(\\ M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \\ :) \\ :(\end{array}\right]$$

$$Ans2 = \left[\begin{array}{cc} .1 = \left(\mathrm{Cos}(65^o)\,\mathrm{Cos}(20^o) + \mathrm{Sin}(65^o)\,\mathrm{Sin}(20^o) = \left(\mathrm{Cos}(45^o) = \frac{\sqrt{2}}{2}\right)\right) & .2 = \left(\mathrm{Sin}\left(\frac{\pi}{36}\right)\mathrm{Cos}\left(\frac{5\pi}{36}\right) + \mathrm{Cos}\left(\frac{\pi}{36}\right)\mathrm{Sin}\left(\frac{5\pi}{36}\right) = \left(\mathrm{Sin}\left(\frac{\pi}{6}\right) = \frac{1}{2}\right)\right) \\ .3 = \left(\mathrm{Cos}(40^o)\,\mathrm{Cos}(20^o) - \mathrm{Sin}(40^o)\,\mathrm{Sin}(20^o) = \left(\mathrm{Cos}(60^o) = \frac{1}{2}\right)\right) & .4 = \left(\mathrm{Sin}(85^o)\,\mathrm{Cos}(25^o) - \mathrm{Cos}(85^o)\,\mathrm{Sin}(25^o) = \left(\mathrm{Sin}(60^o) = \frac{\sqrt{3}}{2}\right)\right) \\ .5 = \left(2\,\mathrm{Sin}(15^o)\,\mathrm{Cos}(15^o) = \left(\mathrm{Sin}(30^o) = \frac{1}{2}\right)\right) & .6 = \left(2\,\mathrm{Cos}\left(\frac{\pi}{12}\right)^2 - 1 = \left(\mathrm{Cos}\left(\frac{\pi}{6}\right) = \frac{\sqrt{3}}{2}\right)\right) \\ .7 = \left(\frac{\mathrm{Tan}\left(\frac{\pi}{9}\right) + \mathrm{Tan}\left(\frac{5\pi}{36}\right)}{1 - \mathrm{Tan}\left(\frac{\pi}{9}\right)\mathrm{Tan}\left(\frac{5\pi}{36}\right)} = \left(\mathrm{Tan}\left(\frac{\pi}{4}\right) = 1\right)\right) & .8 = \left(\mathrm{Cos}\left(\frac{\pi}{8}\right)^2 - \mathrm{Sin}\left(\frac{\pi}{8}\right)^2 = \left(\mathrm{Cos}\left(\frac{\pi}{4}\right) = \frac{\sqrt{2}}{2}\right)\right) \\ .9 = \left(\frac{2\,\mathrm{Tan}\left(\frac{\pi}{12}\right)}{1 - \mathrm{Tan}\left(\frac{\pi}{12}\right)^2} = \left(\mathrm{Tan}\left(\frac{\pi}{6}\right) = \mathrm{Tan}\left(\frac{\pi}{6}\right)\right)\right) & .10 = \left(1 - 2\,\mathrm{Sin}(22.5^o)^2 = \left(\mathrm{Cos}(45^o) = \frac{\sqrt{2}}{2}\right)\right) \end{array}\right], \left[\begin{array}{c} :) \\ :(\\ :) \\ :(\\ \left[\left[\begin{array}{c} M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \end{array}\right]\right] \\ :) \\ :(\\ :) \\ :(\\ :) \\ :(\end{array}\right]$$

$$Ans3 = \left[\begin{array}{cc} .1 = \left(\mathrm{Sin}(\alpha) = \frac{2\sqrt{2}}{3}\right) & .2 = \left(\mathrm{Cos}(\beta) = \frac{2\sqrt{6}}{7}\right) \\ .3 = (\mathrm{Tan}(\alpha) = 2\sqrt{2}) & .4 = \left(\mathrm{Sin}(\alpha - \beta) = \frac{4\sqrt{2}\sqrt{6}}{21} + \frac{5}{21}\right) \\ .5 = \left(\mathrm{Cos}(\beta - \alpha) = \frac{2\sqrt{6}}{21} - \frac{10\sqrt{2}}{21}\right) & .6 = \left(\mathrm{Tan}(\alpha + \beta) = -\frac{49\sqrt{2}}{88} + \frac{45\sqrt{2}\sqrt{3}}{88}\right) \\ .7 = \left(\mathrm{Cos}(2\alpha) = \frac{-7}{9}\right) & .8 = (\mathrm{Tan}(2\beta) = 20\sqrt{6}) \end{array}\right], \quad Ans4 = \left[\begin{array}{cc} .1 = \left(\mathrm{Sin}(\alpha) = \frac{\sqrt{3}}{2}\right) & .2 = \left(\mathrm{Cos}(\beta) = -\frac{2\sqrt{10}}{7}\right) \\ .3 = (\mathrm{Tan}(\alpha) = -\sqrt{3}) & .4 = \left(\mathrm{Sin}(\alpha + \beta) = -\frac{\sqrt{3}\sqrt{10}}{7} + \frac{3}{14}\right) \\ .5 = \left(\mathrm{Cos}(\beta - \alpha) = \frac{\sqrt{10}}{7} - \frac{3\sqrt{3}}{14}\right) & .6 = \left(\mathrm{Tan}(\alpha - \beta) = -\frac{49\sqrt{3}}{13} - \frac{24\sqrt{10}}{13}\right) \\ .7 = \left(\mathrm{Sin}(2\alpha) = -\frac{\sqrt{3}}{2}\right) & .8 = \left(\mathrm{Tan}(2\beta) = \frac{12\sqrt{10}}{31}\right) \end{array}\right], \left[\begin{array}{c} :) \\ :(\\ M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \\ :) \\ :(\end{array}\right]$$

$$Ans5 = (\mathrm{Sin}(21^o) = (\mathrm{Sqrt}(0.1285) = 0.358)), \left[\begin{array}{c} M \\ U \\ T \end{array}\right]$$

$$Ans6 = (\mathrm{Cos}(31^o) = (\mathrm{Sqrt}(0.7345) = 0.857)), \left[\begin{array}{c} M \\ U \\ T \end{array}\right]$$

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

$$Ans2 = \begin{bmatrix} .1 = \left(\frac{\mathrm{Tan}(10^o) + \mathrm{Tan}(20^o)}{1 - \mathrm{Tan}(10^o)\,\mathrm{Tan}(20^o)} = \left(\mathrm{Tan}(30^o) = \frac{\sqrt{3}}{3}\right)\right) & .2 = \left(2\,\mathrm{Sin}\left(\frac{\pi}{12}\right)\mathrm{Cos}\left(\frac{\pi}{12}\right) = \left(\mathrm{Sin}\left(\frac{\pi}{6}\right) = \frac{1}{2}\right)\right) \\ .3 = (\mathrm{Cos}(110^o)\,\mathrm{Cos}(20^o) + \mathrm{Sin}(110^o)\,\mathrm{Sin}(20^o) = (\mathrm{Cos}(90^o) = 0)) & .4 = \left(1 - 2\,\mathrm{Sin}(15^o)^2 = \left(\mathrm{Cos}(30^o) = \frac{\sqrt{3}}{2}\right)\right) \\ .5 = \left(\mathrm{Sin}\left(\frac{11\pi}{36}\right)\mathrm{Cos}\left(\frac{\pi}{18}\right) - \mathrm{Cos}\left(\frac{11\pi}{36}\right)\mathrm{Sin}\left(\frac{\pi}{18}\right) = \left(\mathrm{Sin}\left(\frac{\pi}{4}\right) = \frac{\sqrt{2}}{2}\right)\right) & .6 = \left(\mathrm{Sin}\left(\frac{\pi}{15}\right)\mathrm{Cos}\left(\frac{4\pi}{15}\right) + \mathrm{Cos}\left(\frac{\pi}{15}\right)\mathrm{Sin}\left(\frac{4\pi}{15}\right) = \left(\mathrm{Sin}\left(\frac{\pi}{3}\right) = \frac{\sqrt{3}}{2}\right)\right) \\ .7 = \left(\frac{2\,\mathrm{Tan}(22.5^o)}{1 - \mathrm{Tan}(22.5^o)^2} = (\mathrm{Tan}(45^o) = 1)\right) & .8 = \left(\frac{\mathrm{Tan}\left(\frac{17\pi}{36}\right) - \mathrm{Tan}\left(\frac{5\pi}{36}\right)}{1 + \mathrm{Tan}\left(\frac{17\pi}{36}\right)\mathrm{Tan}\left(\frac{5\pi}{36}\right)} = \left(\mathrm{Tan}\left(\frac{\pi}{3}\right) = \sqrt{3}\right)\right) \\ .9 = \left(2\,\mathrm{Cos}(22.5^o)^2 - 1 = \left(\mathrm{Cos}(45^o) = \frac{\sqrt{2}}{2}\right)\right) & .10 = \left(\mathrm{Cos}\left(\frac{\pi}{8}\right)^2 - \mathrm{Sin}\left(\frac{\pi}{8}\right)^2 = \left(\mathrm{Cos}\left(\frac{\pi}{4}\right) = \frac{\sqrt{2}}{2}\right)\right) \end{bmatrix}, \begin{bmatrix} :) \\ :(\\ :) \\ :(\\ \left[\left[\begin{matrix} M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \end{matrix}\right]\right] \\ :) \\ :(\\ :) \\ :(\\ :) \\ :(\end{bmatrix}$$

$$Ans3 = \begin{bmatrix} .1 = \left(\mathrm{Sin}(\alpha) = \frac{\sqrt{65}}{9}\right) & .2 = \left(\mathrm{Cos}(\beta) = \frac{2\sqrt{14}}{9}\right) \\ .3 = \left(\mathrm{Tan}(\alpha) = \frac{\sqrt{65}}{4}\right) & .4 = \left(\mathrm{Sin}(\alpha - \beta) = \frac{2\sqrt{65}\sqrt{14}}{81} + \frac{20}{81}\right) \\ .5 = \left(\mathrm{Cos}(\beta - \alpha) = \frac{8\sqrt{14}}{81} - \frac{5\sqrt{65}}{81}\right) & .6 = \left(\mathrm{Tan}(\alpha + \beta) = -\frac{4\sqrt{65}}{9} + \frac{10\sqrt{14}}{9}\right) \\ .7 = \left(\mathrm{Cos}(2\beta) = \frac{31}{81}\right) & .8 = \left(\mathrm{Tan}(2\alpha) = -\frac{8\sqrt{65}}{49}\right) \end{bmatrix}, \quad Ans4 = \begin{bmatrix} .1 = \left(\mathrm{Sin}(\alpha) = \frac{2\sqrt{10}}{7}\right) & .2 = \left(\mathrm{Cos}(\beta) = -\frac{\sqrt{5}}{3}\right) \\ .3 = \left(\mathrm{Tan}(\beta) = \frac{2\sqrt{5}}{5}\right) & .4 = \left(\mathrm{Sin}(\alpha + \beta) = -\frac{2\sqrt{10}\sqrt{5}}{21} + \frac{2}{7}\right) \\ .5 = \left(\mathrm{Cos}(\beta - \alpha) = \frac{\sqrt{5}}{7} - \frac{4\sqrt{10}}{21}\right) & .6 = \left(\mathrm{Tan}(\alpha - \beta) = \frac{54\sqrt{2}\sqrt{5}}{115} + \frac{98\sqrt{5}}{115}\right) \\ .7 = \left(\mathrm{Cos}(2\beta) = \frac{1}{9}\right) & .8 = \left(\mathrm{Tan}(2\alpha) = \frac{12\sqrt{10}}{31}\right) \end{bmatrix}, \begin{bmatrix} :) \\ :(\\ M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \\ :) \\ :(\end{bmatrix}$$

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

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

$$Ans1 = \begin{bmatrix} .1 = \left(\text{Cos}(105^o) = \frac{\sqrt{2}}{4} - \frac{\sqrt{2}\sqrt{3}}{4}\right) & .2 = \left(\text{Sin}\left(\frac{5\pi}{12}\right) = \frac{\sqrt{2}}{4} + \frac{\sqrt{2}\sqrt{3}}{4}\right) \\ .3 = \left(\text{Tan}\left(\frac{\pi}{12}\right) = 2 - \sqrt{3}\right) & .4 = (\text{Sec}((-345)^o) = \sqrt{2}\sqrt{3} - \sqrt{2}) \\ .5 = \left(\text{Cos}\left(-\frac{17\pi}{12}\right) = \frac{\sqrt{2}}{4} - \frac{\sqrt{2}\sqrt{3}}{4}\right) & .6 = \left(\text{Sin}\left(-\frac{13\pi}{12}\right) = \frac{\sqrt{2}\sqrt{3}}{4} - \frac{\sqrt{2}}{4}\right) \\ .7 = (\text{Tan}((-105)^o) = 2 + \sqrt{3}) & .8 = \left(\text{Csc}\left(-\frac{19\pi}{12}\right) = \sqrt{2}\sqrt{3} - \sqrt{2}\right) \end{bmatrix}, \begin{bmatrix} :) \\ :(\\ M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \\ :) \\ :(\end{bmatrix}$$

$$Ans2 = \begin{bmatrix} .1 = \left(\text{Cos}(70^o)\,\text{Cos}(10^o) + \text{Sin}(70^o)\,\text{Sin}(10^o) = \left(\text{Cos}(60^o) = \frac{1}{2}\right)\right) & .2 = \left(\text{Cos}(15^o)^2 - \text{Sin}(15^o)^2 = \left(\text{Cos}(30^o) = \frac{\sqrt{3}}{2}\right)\right) \\ .3 = \left(2\,\text{Sin}(22.5^o)\,\text{Cos}(22.5^o) = \left(\text{Sin}(45^o) = \frac{\sqrt{2}}{2}\right)\right) & .4 = \left(1 - 2\,\text{Sin}\left(\frac{\pi}{8}\right)^2 = \left(\text{Cos}\left(\frac{\pi}{4}\right) = \frac{\sqrt{2}}{2}\right)\right) \\ .5 = \left(\frac{\text{Tan}\left(\frac{19\pi}{60}\right) - \text{Tan}\left(\frac{\pi}{15}\right)}{1 + \text{Tan}\left(\frac{19\pi}{60}\right)\text{Tan}\left(\frac{\pi}{15}\right)} = \left(\text{Tan}\left(\frac{\pi}{4}\right) = 1\right)\right) & .6 = \left(\frac{\text{Tan}(40^o) + \text{Tan}(20^o)}{1 - \text{Tan}(40^o)\,\text{Tan}(20^o)} = (\text{Tan}(60^o) = \sqrt{3})\right) \\ .7 = \left(\text{Sin}(25^o)\,\text{Cos}(20^o) + \text{Cos}(25^o)\,\text{Sin}(20^o) = \left(\text{Sin}(45^o) = \frac{\sqrt{2}}{2}\right)\right) & .8 = \left(\text{Sin}\left(\frac{7\pi}{12}\right)\text{Cos}\left(\frac{\pi}{12}\right) - \text{Cos}\left(\frac{7\pi}{12}\right)\text{Sin}\left(\frac{\pi}{12}\right) = \left(\text{Sin}\left(\frac{\pi}{2}\right) = 1\right)\right) \\ .9 = \left(\frac{2\,\text{Tan}(15^o)}{1 - \text{Tan}(15^o)^2} = \left(\text{Tan}(30^o) = \frac{\sqrt{3}}{3}\right)\right) & .10 = \left(2\,\text{Cos}\left(\frac{\pi}{12}\right)^2 - 1 = \left(\text{Cos}\left(\frac{\pi}{6}\right) = \frac{\sqrt{3}}{2}\right)\right) \end{bmatrix}, \begin{bmatrix} :) \\ :(\\ :) \\ :(\\ \begin{bmatrix}\begin{bmatrix} M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \end{bmatrix}\end{bmatrix} \\ :) \\ :(\\ :) \\ :(\\ :) \\ :(\end{bmatrix}$$

$$Ans3 = \begin{bmatrix} .1 = \left(\text{Cos}(\alpha) = \frac{3\sqrt{5}}{7}\right) & .2 = \left(\text{Sin}(\beta) = -\frac{\sqrt{33}}{7}\right) \\ .3 = \left(\text{Tan}(\alpha) = \frac{2\sqrt{5}}{15}\right) & .4 = \left(\text{Sin}(\alpha+\beta) = \frac{8}{49} - \frac{3\sqrt{5}\sqrt{33}}{49}\right) \\ .5 = \left(\text{Cos}(\beta-\alpha) = \frac{12\sqrt{5}}{49} - \frac{2\sqrt{33}}{49}\right) & .6 = \left(\text{Tan}(\alpha-\beta) = \frac{\sqrt{5}}{2} + \frac{\sqrt{33}}{3}\right) \\ .7 = \left(\text{Sin}(2\alpha) = \frac{12\sqrt{5}}{49}\right) & .8 = \left(\text{Tan}(2\beta) = \frac{8\sqrt{33}}{17}\right) \end{bmatrix}, \quad Ans4 = \begin{bmatrix} .1 = \left(\text{Cos}(\alpha) = -\frac{\sqrt{3}}{2}\right) & .2 = \left(\text{Sin}(\beta) = \frac{\sqrt{5}}{3}\right) \\ .3 = \left(\text{Tan}(\alpha) = \frac{\sqrt{3}}{3}\right) & .4 = \left(\text{Sin}(\beta-\alpha) = -\frac{\sqrt{5}\sqrt{3}}{6} - \frac{1}{3}\right) \\ .5 = \left(\text{Cos}(\alpha-\beta) = \frac{\sqrt{3}}{3} - \frac{\sqrt{5}}{6}\right) & .6 = \left(\text{Tan}(\alpha+\beta) = \frac{9\sqrt{3}}{7} - \frac{8\sqrt{5}}{7}\right) \\ .7 = \left(\text{Sin}(2\beta) = -\frac{4\sqrt{5}}{9}\right) & .8 = (\text{Tan}(2\alpha) = \sqrt{3}) \end{bmatrix}, \begin{bmatrix} :) \\ :(\\ M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \\ :) \\ :(\end{bmatrix}$$

$$Ans5 = (\text{Sin}(28^o) = (\text{Sqrt}(0.2205) = 0.469)), \begin{bmatrix} M \\ U \\ T \end{bmatrix}$$

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

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$$Ans1 = \begin{bmatrix} .1 = \left(\mathrm{Cos}\left(\frac{\pi}{12}\right) = \frac{\sqrt{2}}{4} + \frac{\sqrt{2}\sqrt{3}}{4}\right) & .2 = \left(\mathrm{Sin}(105^o) = \frac{\sqrt{2}}{4} + \frac{\sqrt{2}\sqrt{3}}{4}\right) \\ .3 = (\mathrm{Tan}(75^o) = 2 + \sqrt{3}) & .4 = (\mathrm{Cot}(165^o) = -2 - \sqrt{3}) \\ .5 = \left(\mathrm{Csc}\left(-\frac{23\pi}{12}\right) = \sqrt{2}\sqrt{3} + \sqrt{2}\right) & .6 = \left(\mathrm{Cos}\left(-\frac{11\pi}{12}\right) = -\frac{\sqrt{2}}{4} - \frac{\sqrt{2}\sqrt{3}}{4}\right) \\ .7 = (\mathrm{Sec}((-285)^o) = \sqrt{2}\sqrt{3} + \sqrt{2}) & .8 = (\mathrm{Tan}(195^o) = 2 - \sqrt{3}) \end{bmatrix}, \; , \begin{bmatrix} :) \\ :(\\ M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \\ :) \\ :(\end{bmatrix}$$

$$Ans2 = \begin{bmatrix} .1 = \left(\frac{\mathrm{Tan}(55^o) - \mathrm{Tan}(10^o)}{1 + \mathrm{Tan}(55^o)\,\mathrm{Tan}(10^o)} = (\mathrm{Tan}(45^o) = 1)\right) & .2 = \left(2\,\mathrm{Cos}\left(\frac{\pi}{8}\right)^2 - 1 = \left(\mathrm{Cos}\left(\frac{\pi}{4}\right) = \frac{\sqrt{2}}{2}\right)\right) \\ .3 = \left(\frac{2\,\mathrm{Tan}\left(\frac{\pi}{8}\right)}{1 - \mathrm{Tan}\left(\frac{\pi}{8}\right)^2} = \left(\mathrm{Tan}\left(\frac{\pi}{4}\right) = \mathrm{Tan}\left(\frac{\pi}{4}\right)\right)\right) & .4 = \left(1 - 2\,\mathrm{Sin}(22.5^o)^2 = \left(\mathrm{Cos}(45^o) = \frac{\sqrt{2}}{2}\right)\right) \\ .5 = \left(\frac{\mathrm{Tan}(15^o) + \mathrm{Tan}(30^o)}{1 - \mathrm{Tan}(15^o)\,\mathrm{Tan}(30^o)} = (\mathrm{Tan}(45^o) = 1)\right) & .6 = \left(\mathrm{Cos}(15^o)^2 - \mathrm{Sin}(15^o)^2 = \left(\mathrm{Cos}(30^o) = \frac{\sqrt{3}}{2}\right)\right) \\ .7 = \left(\mathrm{Sin}\left(\frac{5\pi}{18}\right)\mathrm{Cos}\left(\frac{\pi}{9}\right) - \mathrm{Cos}\left(\frac{5\pi}{18}\right)\mathrm{Sin}\left(\frac{\pi}{9}\right) = \left(\mathrm{Sin}\left(\frac{\pi}{6}\right) = \frac{1}{2}\right)\right) & .8 = \left(2\,\mathrm{Sin}\left(\frac{\pi}{12}\right)\mathrm{Cos}\left(\frac{\pi}{12}\right) = \left(\mathrm{Sin}\left(\frac{\pi}{6}\right) = \frac{1}{2}\right)\right) \\ .9 = \left(\mathrm{Cos}\left(\frac{5\pi}{36}\right)\mathrm{Cos}\left(\frac{7\pi}{36}\right) - \mathrm{Sin}\left(\frac{5\pi}{36}\right)\mathrm{Sin}\left(\frac{7\pi}{36}\right) = \left(\mathrm{Cos}\left(\frac{\pi}{3}\right) = \frac{1}{2}\right)\right) & .10 = (\mathrm{Sin}(12^o)\,\mathrm{Cos}(78^o) + \mathrm{Cos}(12^o)\,\mathrm{Sin}(78^o) = (\mathrm{Sin}(90^o) = 1)) \end{bmatrix}, \; , \begin{bmatrix} :) \\ :(\\ :) \\ :(\\ \begin{bmatrix}\begin{bmatrix} M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \end{bmatrix}\end{bmatrix} \\ :) \\ :(\\ :) \\ :(\\ :) \\ :(\end{bmatrix}$$

$$Ans3 = \begin{bmatrix} .1 = \left(\mathrm{Cos}(\alpha) = \frac{2\sqrt{6}}{5}\right) & .2 = \left(\mathrm{Sin}(\beta) = -\frac{\sqrt{3}}{2}\right) \\ .3 = (\mathrm{Tan}(\beta) = \sqrt{3}) & .4 = \left(\mathrm{Sin}(\alpha - \beta) = -\frac{1}{10} + \frac{\sqrt{6}\sqrt{3}}{5}\right) \\ .5 = \left(\mathrm{Cos}(\alpha + \beta) = -\frac{\sqrt{6}}{5} + \frac{\sqrt{3}}{10}\right) & .6 = \left(\mathrm{Tan}(\beta - \alpha) = \frac{25\sqrt{3}}{21} - \frac{8\sqrt{2}\sqrt{3}}{21}\right) \\ .7 = \left(\mathrm{Sin}(2\beta) = \frac{\sqrt{3}}{2}\right) & .8 = \left(\mathrm{Tan}(2\alpha) = \frac{4\sqrt{6}}{23}\right) \end{bmatrix}, \; , \; Ans4 = \begin{bmatrix} .1 = \left(\mathrm{Cos}(\alpha) = -\frac{\sqrt{21}}{5}\right) & .2 = \left(\mathrm{Sin}(\beta) = -\frac{2\sqrt{14}}{9}\right) \\ .3 = \left(\mathrm{Tan}(\beta) = -\frac{2\sqrt{14}}{5}\right) & .4 = \left(\mathrm{Sin}(\alpha - \beta) = \frac{2}{9} - \frac{2\sqrt{21}\sqrt{14}}{45}\right) \\ .5 = \left(\mathrm{Cos}(\alpha + \beta) = -\frac{\sqrt{21}}{9} + \frac{4\sqrt{14}}{45}\right) & .6 = \left(\mathrm{Tan}(\beta - \alpha) = -\frac{250\sqrt{2}\sqrt{7}}{301} + \frac{162\sqrt{7}\sqrt{3}}{301}\right) \\ .7 = \left(\mathrm{Cos}(2\alpha) = \frac{17}{25}\right) & .8 = \left(\mathrm{Tan}(2\beta) = \frac{20\sqrt{14}}{31}\right) \end{bmatrix}, \; , \begin{bmatrix} :) \\ :(\\ M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \\ :) \\ :(\end{bmatrix}$$

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

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

$$Ans1 = \begin{bmatrix} .1 = \left(\mathrm{Sin}(75^{o}) = \frac{\sqrt{2}}{4} + \frac{\sqrt{2}\sqrt{3}}{4}\right) & .2 = \left(\mathrm{Cos}\left(\frac{7\pi}{12}\right) = \frac{\sqrt{2}}{4} - \frac{\sqrt{2}\sqrt{3}}{4}\right) \\ .3 = \left(\mathrm{Tan}\left(\frac{\pi}{12}\right) = 2 - \sqrt{3}\right) & .4 = \left(\mathrm{Cos}\left(\frac{23\pi}{12}\right) = \frac{\sqrt{2}}{4} + \frac{\sqrt{2}\sqrt{3}}{4}\right) \\ .5 = (\mathrm{Cot}((-285)^{o}) = 2 - \sqrt{3}) & .6 = \left(\mathrm{Tan}\left(-\frac{\pi}{12}\right) = -2 + \sqrt{3}\right) \\ .7 = (\mathrm{Csc}(165^{o}) = \sqrt{2}\sqrt{3} + \sqrt{2}) & .8 = \left(\mathrm{Sec}\left(-\frac{13\pi}{12}\right) = -\sqrt{2}\sqrt{3} + \sqrt{2}\right) \end{bmatrix}, \ , \begin{bmatrix} :) \\ :(\\ M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \\ :) \\ :(\end{bmatrix}$$

$$Ans2 = \begin{bmatrix} .1 = \left(\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(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(\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) & .4 = \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) \\ .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(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) \\ .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{Sin}\left(\frac{\pi}{9}\right)\mathrm{Cos}\left(\frac{2\pi}{9}\right) + \mathrm{Cos}\left(\frac{\pi}{9}\right)\mathrm{Sin}\left(\frac{2\pi}{9}\right) = \left(\mathrm{Sin}\left(\frac{\pi}{3}\right) = \frac{\sqrt{3}}{2}\right)\right) \\ .9 = \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) & .10 = \left(1 - 2\,\mathrm{Sin}(15^{o})^{2} = \left(\mathrm{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}$$

$$Ans3 = \begin{bmatrix} .1 = \left(\mathrm{Cos}(\alpha) = \frac{\sqrt{5}}{3}\right) & .2 = \left(\mathrm{Sin}(\beta) = -\frac{\sqrt{55}}{8}\right) \\ .3 = \left(\mathrm{Tan}(\alpha) = \frac{2\sqrt{5}}{5}\right) & .4 = \left(\mathrm{Sin}(\alpha - \beta) = -\frac{1}{4} + \frac{\sqrt{5}\sqrt{55}}{24}\right) \\ .5 = \left(\mathrm{Cos}(\beta - \alpha) = -\frac{\sqrt{5}}{8} - \frac{\sqrt{55}}{12}\right) & .6 = \left(\mathrm{Tan}(\alpha + \beta) = -\frac{128\sqrt{5}}{175} - \frac{27\sqrt{5}\sqrt{11}}{175}\right) \\ .7 = \left(\mathrm{Cos}(2\alpha) = \frac{1}{9}\right) & .8 = \left(\mathrm{Tan}(2\beta) = -\frac{3\sqrt{55}}{23}\right) \end{bmatrix}, \ , Ans4 = \begin{bmatrix} .1 = \left(\mathrm{Cos}(\alpha) = -\frac{\sqrt{3}}{2}\right) & .2 = \left(\mathrm{Sin}(\beta) = -\frac{2\sqrt{6}}{7}\right) \\ .3 = \left(\mathrm{Tan}(\alpha) = -\frac{\sqrt{3}}{3}\right) & .4 = \left(\mathrm{Sin}(\alpha - \beta) = \frac{5}{14} - \frac{\sqrt{6}\sqrt{3}}{7}\right) \\ .5 = \left(\mathrm{Cos}(\alpha + \beta) = -\frac{5\sqrt{3}}{14} + \frac{\sqrt{6}}{7}\right) & .6 = \left(\mathrm{Tan}(\beta - \alpha) = -\frac{40\sqrt{2}\sqrt{3}}{51} + \frac{49\sqrt{3}}{51}\right) \\ .7 = \left(\mathrm{Cos}(2\beta) = \frac{1}{49}\right) & .8 = (\mathrm{Tan}(2\alpha) = -\sqrt{3}) \end{bmatrix}, \ , \begin{bmatrix} :) \\ :(\\ M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \\ :) \\ :(\end{bmatrix}$$

$$Ans5 = (\mathrm{Sin}(43^{o}) = (\mathrm{Sqrt}(0.4650) = 0.682)), \ , \begin{bmatrix} M \\ U \\ T \end{bmatrix}$$

$$Ans6 = (\mathrm{Cos}(6^{o}) = (\mathrm{Sqrt}(0.9890) = 0.995)), \ , \begin{bmatrix} M \\ U \\ T \end{bmatrix}$$

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

$$Ans2 = \begin{bmatrix} .1 = \left(\operatorname{Cos}\left(\frac{\pi}{10}\right)\operatorname{Cos}\left(\frac{\pi}{15}\right) - \operatorname{Sin}\left(\frac{\pi}{10}\right)\operatorname{Sin}\left(\frac{\pi}{15}\right) = \left(\operatorname{Cos}\left(\frac{\pi}{6}\right) = \frac{\sqrt{3}}{2}\right)\right) & .2 = \left(2\operatorname{Cos}(22.5^o)^2 - 1 = \left(\operatorname{Cos}(45^o) = \frac{\sqrt{2}}{2}\right)\right) \\ .3 = \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) & .4 = \left(1 - 2\operatorname{Sin}(15^o)^2 = \left(\operatorname{Cos}(30^o) = \frac{\sqrt{3}}{2}\right)\right) \\ .5 = \left(\frac{\operatorname{Tan}\left(\frac{13\pi}{36}\right) - \operatorname{Tan}\left(\frac{\pi}{9}\right)}{1 + \operatorname{Tan}\left(\frac{13\pi}{36}\right)\operatorname{Tan}\left(\frac{\pi}{9}\right)} = \left(\operatorname{Tan}\left(\frac{\pi}{4}\right) = 1\right)\right) & .6 = \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) \\ .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(\frac{\operatorname{Tan}\left(\frac{5\pi}{18}\right) + \operatorname{Tan}\left(\frac{\pi}{18}\right)}{1 - \operatorname{Tan}\left(\frac{5\pi}{18}\right)\operatorname{Tan}\left(\frac{\pi}{18}\right)} = \left(\operatorname{Tan}\left(\frac{\pi}{3}\right) = \sqrt{3}\right)\right) \\ .9 = \left(\frac{2\operatorname{Tan}(15^o)}{1 - \operatorname{Tan}(15^o)^2} = \left(\operatorname{Tan}(30^o) = \frac{\sqrt{3}}{3}\right)\right) & .10 = \left(\operatorname{Sin}(20^o)\operatorname{Cos}(70^o) + \operatorname{Cos}(20^o)\operatorname{Sin}(70^o) = (\operatorname{Sin}(90^o) = 1)\right) \end{bmatrix}, \quad , \begin{bmatrix} :) \\ :(\\ :) \\ :(\\ \begin{bmatrix}\begin{bmatrix} M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \end{bmatrix}\end{bmatrix} \\ :) \\ :(\\ :) \\ :(\\ :) \\ :(\end{bmatrix}$$

$$Ans3 = \begin{bmatrix} .1 = \left(\operatorname{Cos}(\alpha) = \frac{2\sqrt{6}}{7}\right) & .2 = \left(\operatorname{Sin}(\beta) = -\frac{3\sqrt{5}}{7}\right) \\ .3 = \left(\operatorname{Tan}(\beta) = -\frac{3\sqrt{5}}{2}\right) & .4 = \left(\operatorname{Sin}(\alpha-\beta) = \frac{10}{49} + \frac{6\sqrt{6}\sqrt{5}}{49}\right) \\ .5 = \left(\operatorname{Cos}(\beta-\alpha) = \frac{4\sqrt{6}}{49} - \frac{15\sqrt{5}}{49}\right) & .6 = \left(\operatorname{Tan}(\alpha+\beta) = -\frac{10\sqrt{6}}{21} + \frac{2\sqrt{5}}{7}\right) \\ .7 = \left(\operatorname{Cos}(2\alpha) = \frac{-1}{49}\right) & .8 = \left(\operatorname{Tan}(2\beta) = \frac{12\sqrt{5}}{41}\right) \end{bmatrix}, \quad , \quad Ans4 = \begin{bmatrix} .1 = \left(\operatorname{Sin}(\alpha) = -\frac{\sqrt{21}}{5}\right) & .2 = \left(\operatorname{Cos}(\beta) = -\frac{\sqrt{3}}{2}\right) \\ .3 = \left(\operatorname{Tan}(\beta) = -\frac{\sqrt{3}}{3}\right) & .4 = \left(\operatorname{Sin}(\beta-\alpha) = -\frac{1}{5} - \frac{\sqrt{21}\sqrt{3}}{10}\right) \\ .5 = \left(\operatorname{Cos}(\alpha+\beta) = \frac{\sqrt{3}}{5} + \frac{\sqrt{21}}{10}\right) & .6 = \left(\operatorname{Tan}(\alpha-\beta) = -\frac{8\sqrt{7}\sqrt{3}}{9} - \frac{25\sqrt{3}}{9}\right) \\ .7 = \left(\operatorname{Cos}(2\alpha) = \frac{-17}{25}\right) & .8 = \left(\operatorname{Tan}(2\beta) = -\sqrt{3}\right) \end{bmatrix}, \quad , \begin{bmatrix} :) \\ :(\\ M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \\ :) \\ :(\end{bmatrix}$$

$$Ans5 = (\operatorname{Cos}(8^o) = (\operatorname{Sqrt}(0.9805) = 0.990)), \quad , \begin{bmatrix} M \\ U \\ T \end{bmatrix}$$

$$Ans6 = (\operatorname{Sin}(34^o) = (\operatorname{Sqrt}(0.3125) = 0.559)), \quad , \begin{bmatrix} M \\ U \\ T \end{bmatrix}$$

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$$Ans1 = \begin{bmatrix} .1 = \left(\mathrm{Cos}(75^o) = \frac{\sqrt{2}\sqrt{3}}{4} - \frac{\sqrt{2}}{4}\right) & .2 = \left(\mathrm{Sin}\left(\frac{\pi}{12}\right) = \frac{\sqrt{2}\sqrt{3}}{4} - \frac{\sqrt{2}}{4}\right) \\ .3 = \left(\mathrm{Tan}\left(\frac{7\pi}{12}\right) = -2 - \sqrt{3}\right) & .4 = \left(\mathrm{Tan}\left(-\frac{13\pi}{12}\right) = -2 + \sqrt{3}\right) \\ .5 = \left(\mathrm{Cos}((-285)^o) = \frac{\sqrt{2}\sqrt{3}}{4} - \frac{\sqrt{2}}{4}\right) & .6 = (\mathrm{Sec}((-165)^o) = -\sqrt{2}\sqrt{3} + \sqrt{2}) \\ .7 = \left(\mathrm{Cot}\left(\frac{19\pi}{12}\right) = -2 + \sqrt{3}\right) & .8 = (\mathrm{Csc}((-15)^o) = -\sqrt{2}\sqrt{3} - \sqrt{2}) \end{bmatrix}, \begin{bmatrix} \frac{:)}{:(} \\ M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \\ \frac{:)}{:(} \end{bmatrix}$$

$$Ans2 = \begin{bmatrix} .1 = \left(1 - 2\,\mathrm{Sin}(22.5^o)^2 = \left(\mathrm{Cos}(45^o) = \frac{\sqrt{2}}{2}\right)\right) & .2 = \left(\frac{\mathrm{Tan}(55^o) - \mathrm{Tan}(10^o)}{1 + \mathrm{Tan}(55^o)\,\mathrm{Tan}(10^o)} = (\mathrm{Tan}(45^o) = 1)\right) \\ .3 = \left(\mathrm{Sin}\left(\frac{\pi}{15}\right)\mathrm{Cos}\left(\frac{4\pi}{15}\right) + \mathrm{Cos}\left(\frac{\pi}{15}\right)\mathrm{Sin}\left(\frac{4\pi}{15}\right) = \left(\mathrm{Sin}\left(\frac{\pi}{3}\right) = \frac{\sqrt{3}}{2}\right)\right) & .4 = \left(\mathrm{Cos}\left(\frac{\pi}{8}\right)^2 - \mathrm{Sin}\left(\frac{\pi}{8}\right)^2 = \left(\mathrm{Cos}\left(\frac{\pi}{4}\right) = \frac{\sqrt{2}}{2}\right)\right) \\ .5 = \left(\mathrm{Sin}(50^o)\,\mathrm{Cos}(20^o) - \mathrm{Cos}(50^o)\,\mathrm{Sin}(20^o) = \left(\mathrm{Sin}(30^o) = \frac{1}{2}\right)\right) & .6 = \left(2\,\mathrm{Cos}(15^o)^2 - 1 = \left(\mathrm{Cos}(30^o) = \frac{\sqrt{3}}{2}\right)\right) \\ .7 = \left(2\,\mathrm{Sin}\left(\frac{\pi}{12}\right)\mathrm{Cos}\left(\frac{\pi}{12}\right) = \left(\mathrm{Sin}\left(\frac{\pi}{6}\right) = \frac{1}{2}\right)\right) & .8 = \left(\frac{\mathrm{Tan}\left(\frac{\pi}{15}\right) + \mathrm{Tan}\left(\frac{11\pi}{60}\right)}{1 - \mathrm{Tan}\left(\frac{\pi}{15}\right)\mathrm{Tan}\left(\frac{11\pi}{60}\right)} = \left(\mathrm{Tan}\left(\frac{\pi}{4}\right) = 1\right)\right) \\ .9 = \left(\mathrm{Cos}\left(\frac{11\pi}{18}\right)\mathrm{Cos}\left(\frac{\pi}{9}\right) + \mathrm{Sin}\left(\frac{11\pi}{18}\right)\mathrm{Sin}\left(\frac{\pi}{9}\right) = \left(\mathrm{Cos}\left(\frac{\pi}{2}\right) = 0\right)\right) & .10 = \left(\frac{2\,\mathrm{Tan}\left(\frac{\pi}{12}\right)}{1 - \mathrm{Tan}\left(\frac{\pi}{12}\right)^2} = \left(\mathrm{Tan}\left(\frac{\pi}{6}\right) = \mathrm{Tan}\left(\frac{\pi}{6}\right)\right)\right) \end{bmatrix}, \begin{bmatrix} \frac{:)}{:(} \\ \frac{:)}{:(} \\ [[M, a, t, h, @, M, U, T]] \\ \frac{:)}{:(} \\ \frac{:)}{:(} \\ \frac{:)}{:(} \end{bmatrix}$$

$$Ans3 = \begin{bmatrix} .1 = \left(\mathrm{Sin}(\alpha) = \frac{3\sqrt{5}}{7}\right) & .2 = \left(\mathrm{Cos}(\beta) = \frac{-3}{5}\right) \\ .3 = \left(\mathrm{Tan}(\beta) = \frac{4}{3}\right) & .4 = \left(\mathrm{Sin}(\alpha - \beta) = -\frac{9\sqrt{5}}{35} + \frac{8}{35}\right) \\ .5 = \left(\mathrm{Cos}(\alpha + \beta) = -\frac{6}{35} + \frac{12\sqrt{5}}{35}\right) & .6 = \left(\mathrm{Tan}(\beta - \alpha) = -\frac{49}{57} + \frac{25\sqrt{5}}{114}\right) \\ .7 = \left(\mathrm{Cos}(2\beta) = \frac{-7}{25}\right) & .8 = \left(\mathrm{Tan}(2\alpha) = -\frac{12\sqrt{5}}{41}\right) \end{bmatrix}, \quad Ans4 = \begin{bmatrix} .1 = \left(\mathrm{Cos}(\alpha) = -\frac{2\sqrt{2}}{3}\right) & .2 = \left(\mathrm{Sin}(\beta) = -\frac{\sqrt{3}}{2}\right) \\ .3 = (\mathrm{Tan}(\beta) = -\sqrt{3}) & .4 = \left(\mathrm{Sin}(\beta - \alpha) = \frac{\sqrt{2}\sqrt{3}}{3} - \frac{1}{6}\right) \\ .5 = \left(\mathrm{Cos}(\alpha + \beta) = -\frac{\sqrt{2}}{3} + \frac{\sqrt{3}}{6}\right) & .6 = \left(\mathrm{Tan}(\alpha - \beta) = -\frac{8\sqrt{2}}{5} + \frac{9\sqrt{3}}{5}\right) \\ .7 = \left(\mathrm{Cos}(2\alpha) = \frac{7}{9}\right) & .8 = (\mathrm{Tan}(2\beta) = \sqrt{3}) \end{bmatrix}, \begin{bmatrix} \frac{:)}{:(} \\ M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \\ \frac{:)}{:(} \end{bmatrix}$$

$$Ans5 = (\mathrm{Cos}(12^o) = (\mathrm{Sqrt}(0.9570) = 0.978)), \begin{bmatrix} M \\ U \\ T \end{bmatrix}$$

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

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

$$Ans2 = \begin{bmatrix} .1 = \left(\mathrm{Cos}(22.5^o)^2 - \mathrm{Sin}(22.5^o)^2 = \left(\mathrm{Cos}(45^o) = \frac{\sqrt{2}}{2}\right)\right) & .2 = \left(\mathrm{Cos}(50^o)\,\mathrm{Cos}(20^o) + \mathrm{Sin}(50^o)\,\mathrm{Sin}(20^o) = \left(\mathrm{Cos}(30^o) = \frac{\sqrt{3}}{2}\right)\right) \\ .3 = \left(\mathrm{Cos}(40^o)\,\mathrm{Cos}(20^o) - \mathrm{Sin}(40^o)\,\mathrm{Sin}(20^o) = \left(\mathrm{Cos}(60^o) = \frac{1}{2}\right)\right) & .4 = \left(\mathrm{Sin}\left(\frac{17\pi}{30}\right)\mathrm{Cos}\left(\frac{\pi}{15}\right) - \mathrm{Cos}\left(\frac{17\pi}{30}\right)\mathrm{Sin}\left(\frac{\pi}{15}\right) = \left(\mathrm{Sin}\left(\frac{\pi}{2}\right) = 1\right)\right) \\ .5 = \left(\frac{\mathrm{Tan}(10^o) + \mathrm{Tan}(20^o)}{1 - \mathrm{Tan}(10^o)\,\mathrm{Tan}(20^o)} = \left(\mathrm{Tan}(30^o) = \frac{\sqrt{3}}{3}\right)\right) & .6 = \left(1 - 2\,\mathrm{Sin}\left(\frac{\pi}{12}\right)^2 = \left(\mathrm{Cos}\left(\frac{\pi}{6}\right) = \frac{\sqrt{3}}{2}\right)\right) \\ .7 = \left(\frac{2\,\mathrm{Tan}(15^o)}{1 - \mathrm{Tan}(15^o)^2} = \left(\mathrm{Tan}(30^o) = \frac{\sqrt{3}}{3}\right)\right) & .8 = \left(2\,\mathrm{Cos}\left(\frac{\pi}{8}\right)^2 - 1 = \left(\mathrm{Cos}\left(\frac{\pi}{4}\right) = \frac{\sqrt{2}}{2}\right)\right) \\ .9 = \left(2\,\mathrm{Sin}(15^o)\,\mathrm{Cos}(15^o) = \left(\mathrm{Sin}(30^o) = \frac{1}{2}\right)\right) & .10 = \left(\frac{\mathrm{Tan}\left(\frac{13\pi}{36}\right) - \mathrm{Tan}\left(\frac{\pi}{9}\right)}{1 + \mathrm{Tan}\left(\frac{13\pi}{36}\right)\mathrm{Tan}\left(\frac{\pi}{9}\right)} = \left(\mathrm{Tan}\left(\frac{\pi}{4}\right) = 1\right)\right) \end{bmatrix}, \; \begin{bmatrix} :) \\ :(\\ :) \\ :(\\ \begin{bmatrix}\begin{bmatrix} M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \end{bmatrix}\end{bmatrix} \\ :) \\ :(\\ :) \\ :(\\ :) \\ :(\end{bmatrix}$$

$$Ans3 = \begin{bmatrix} .1 = \left(\mathrm{Sin}(\alpha) = \frac{3}{5}\right) & .2 = \left(\mathrm{Cos}(\beta) = -\frac{2\sqrt{6}}{5}\right) \\ .3 = \left(\mathrm{Tan}(\beta) = -\frac{\sqrt{6}}{12}\right) & .4 = \left(\mathrm{Sin}(\alpha - \beta) = -\frac{6\sqrt{6}}{25} - \frac{4}{25}\right) \\ .5 = \left(\mathrm{Cos}(\alpha + \beta) = -\frac{8\sqrt{6}}{25} - \frac{3}{25}\right) & .6 = \left(\mathrm{Tan}(\beta - \alpha) = -\frac{2\sqrt{6}}{15} - \frac{4}{5}\right) \\ .7 = \left(\mathrm{Sin}(2\beta) = -\frac{4\sqrt{6}}{25}\right) & .8 = \left(\mathrm{Tan}(2\alpha) = \frac{24}{7}\right) \end{bmatrix}, \; Ans4 = \begin{bmatrix} .1 = \left(\mathrm{Sin}(\alpha) = \frac{-4}{5}\right) & .2 = \left(\mathrm{Cos}(\beta) = \frac{\sqrt{3}}{2}\right) \\ .3 = \left(\mathrm{Tan}(\beta) = -\frac{\sqrt{3}}{3}\right) & .4 = \left(\mathrm{Sin}(\alpha - \beta) = -\frac{2\sqrt{3}}{5} - \frac{3}{10}\right) \\ .5 = \left(\mathrm{Cos}(\alpha + \beta) = -\frac{3\sqrt{3}}{10} - \frac{2}{5}\right) & .6 = \left(\mathrm{Tan}(\beta - \alpha) = -\frac{25\sqrt{3}}{11} - \frac{48}{11}\right) \\ .7 = \left(\mathrm{Sin}(2\beta) = -\frac{\sqrt{3}}{2}\right) & .8 = \left(\mathrm{Tan}(2\alpha) = \frac{-24}{7}\right) \end{bmatrix}, \; \begin{bmatrix} :) \\ :(\\ M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \\ :) \\ :(\end{bmatrix}$$

$$Ans5 = (\mathrm{Cos}(23^o) = (\mathrm{Sqrt}(0.8475) = 0.921)), \; \begin{bmatrix} M \\ U \\ T \end{bmatrix}$$

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

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

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

$$Ans3 = \begin{bmatrix} .1 = \left(\mathrm{Cos}(\alpha) = \frac{\sqrt{65}}{9}\right) & .2 = \left(\mathrm{Sin}(\beta) = -\frac{\sqrt{55}}{8}\right) \\ .3 = \left(\mathrm{Tan}(\alpha) = \frac{4\sqrt{65}}{65}\right) & .4 = \left(\mathrm{Sin}(\alpha - \beta) = -\frac{1}{6} + \frac{\sqrt{65}\sqrt{55}}{72}\right) \\ .5 = \left(\mathrm{Cos}(\beta - \alpha) = -\frac{\sqrt{65}}{24} - \frac{\sqrt{55}}{18}\right) & .6 = \left(\mathrm{Tan}(\alpha + \beta) = -\frac{256\sqrt{5}\sqrt{13}}{295} - \frac{243\sqrt{5}\sqrt{11}}{295}\right) \\ .7 = \left(\mathrm{Sin}(2\alpha) = \frac{8\sqrt{65}}{81}\right) & .8 = \left(\mathrm{Tan}(2\beta) = -\frac{3\sqrt{55}}{23}\right) \end{bmatrix}, \; Ans4 = \begin{bmatrix} .1 = \left(\mathrm{Cos}(\alpha) = \frac{\sqrt{39}}{8}\right) & .2 = \left(\mathrm{Sin}(\beta) = \frac{\sqrt{11}}{6}\right) \\ .3 = \left(\mathrm{Tan}(\beta) = -\frac{\sqrt{11}}{5}\right) & .4 = \left(\mathrm{Sin}(\alpha - \beta) = \frac{25}{48} - \frac{\sqrt{39}\sqrt{11}}{48}\right) \\ .5 = \left(\mathrm{Cos}(\beta - \alpha) = -\frac{5\sqrt{39}}{48} - \frac{5\sqrt{11}}{48}\right) & .6 = \left(\mathrm{Tan}(\alpha + \beta) = -\frac{9\sqrt{39}}{35} - \frac{16\sqrt{11}}{35}\right) \\ .7 = \left(\mathrm{Sin}(2\beta) = -\frac{5\sqrt{11}}{18}\right) & .8 = \left(\mathrm{Tan}(2\alpha) = -\frac{5\sqrt{39}}{7}\right) \end{bmatrix}, \; , \begin{bmatrix} :) \\ :(\\ M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \\ :) \\ :(\end{bmatrix}$$

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

$$Ans6 = (\mathrm{Sin}(41^o) = (\mathrm{Sqrt}(0.4305) = 0.656)), \; , \begin{bmatrix} M \\ U \\ T \end{bmatrix}$$

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$$Ans1 = \begin{bmatrix} .1 = \left(\text{Cos}(75^o) = \frac{\sqrt{2}\sqrt{3}}{4} - \frac{\sqrt{2}}{4}\right) & .2 = \left(\text{Sin}\left(\frac{7\pi}{12}\right) = \frac{\sqrt{2}}{4} + \frac{\sqrt{2}\sqrt{3}}{4}\right) \\ .3 = (\text{Tan}(15^o) = 2 - \sqrt{3}) & .4 = \left(\text{Sin}\left(\frac{11\pi}{12}\right) = \frac{\sqrt{2}\sqrt{3}}{4} - \frac{\sqrt{2}}{4}\right) \\ .5 = (\text{Cot}((-285)^o) = 2 - \sqrt{3}) & .6 = \left(\text{Sec}\left(-\frac{17\pi}{12}\right) = -\sqrt{2}\sqrt{3} - \sqrt{2}\right) \\ .7 = (\text{Csc}((-195)^o) = \sqrt{2}\sqrt{3} + \sqrt{2}) & .8 = \left(\text{Tan}\left(\frac{19\pi}{12}\right) = -2 - \sqrt{3}\right) \end{bmatrix}, \begin{bmatrix} :) \\ :(\\ M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \\ :) \\ :(\end{bmatrix}$$

$$Ans2 = \begin{bmatrix} .1 = \left(1 - 2\,\text{Sin}(15^o)^2 = \left(\text{Cos}(30^o) = \frac{\sqrt{3}}{2}\right)\right) & .2 = \left(\text{Sin}(80^o)\,\text{Cos}(20^o) - \text{Cos}(80^o)\,\text{Sin}(20^o) = \left(\text{Sin}(60^o) = \frac{\sqrt{3}}{2}\right)\right) \\ .3 = \left(2\,\text{Cos}\left(\frac{\pi}{12}\right)^2 - 1 = \left(\text{Cos}\left(\frac{\pi}{6}\right) = \frac{\sqrt{3}}{2}\right)\right) & .4 = \left(\text{Cos}(22.5^o)^2 - \text{Sin}(22.5^o)^2 = \left(\text{Cos}(45^o) = \frac{\sqrt{2}}{2}\right)\right) \\ .5 = \left(\frac{\text{Tan}\left(\frac{\pi}{12}\right) + \text{Tan}\left(\frac{\pi}{6}\right)}{1 - \text{Tan}\left(\frac{\pi}{12}\right)\text{Tan}\left(\frac{\pi}{6}\right)} = \left(\text{Tan}\left(\frac{\pi}{4}\right) = 1\right)\right) & .6 = \left(\frac{\text{Tan}(42^o) - \text{Tan}(12^o)}{1 + \text{Tan}(42^o)\,\text{Tan}(12^o)} = \left(\text{Tan}(30^o) = \frac{\sqrt{3}}{3}\right)\right) \\ .7 = \left(\frac{2\,\text{Tan}(15^o)}{1 - \text{Tan}(15^o)^2} = \left(\text{Tan}(30^o) = \frac{\sqrt{3}}{3}\right)\right) & .8 = \left(\text{Cos}\left(\frac{11\pi}{18}\right)\text{Cos}\left(\frac{\pi}{9}\right) + \text{Sin}\left(\frac{11\pi}{18}\right)\text{Sin}\left(\frac{\pi}{9}\right) = \left(\text{Cos}\left(\frac{\pi}{2}\right) = 0\right)\right) \\ .9 = \left(2\,\text{Sin}\left(\frac{\pi}{8}\right)\text{Cos}\left(\frac{\pi}{8}\right) = \left(\text{Sin}\left(\frac{\pi}{4}\right) = \frac{\sqrt{2}}{2}\right)\right) & .10 = \left(\text{Cos}\left(\frac{5\pi}{18}\right)\text{Cos}\left(\frac{\pi}{18}\right) - \text{Sin}\left(\frac{5\pi}{18}\right)\text{Sin}\left(\frac{\pi}{18}\right) = \left(\text{Cos}\left(\frac{\pi}{3}\right) = \frac{1}{2}\right)\right) \end{bmatrix}, \begin{bmatrix} :) \\ :(\\ :) \\ :(\\ \begin{bmatrix}\begin{bmatrix} M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \end{bmatrix}\end{bmatrix} \\ :) \\ :(\\ :) \\ :(\\ :) \\ :(\end{bmatrix}$$

$$Ans3 = \begin{bmatrix} .1 = \left(\text{Cos}(\alpha) = \frac{\sqrt{5}}{3}\right) & .2 = \left(\text{Sin}(\beta) = \frac{\sqrt{11}}{6}\right) \\ .3 = \left(\text{Tan}(\beta) = -\frac{\sqrt{11}}{5}\right) & .4 = \left(\text{Sin}(\beta - \alpha) = \frac{\sqrt{5}\sqrt{11}}{18} + \frac{5}{9}\right) \\ .5 = \left(\text{Cos}(\alpha + \beta) = -\frac{5\sqrt{5}}{18} - \frac{\sqrt{11}}{9}\right) & .6 = \left(\text{Tan}(\alpha - \beta) = \frac{8\sqrt{5}}{9} + \frac{5\sqrt{11}}{9}\right) \\ .7 = \left(\text{Sin}(2\alpha) = \frac{4\sqrt{5}}{9}\right) & .8 = \left(\text{Tan}(2\beta) = -\frac{5\sqrt{11}}{7}\right) \end{bmatrix}, Ans4 = \begin{bmatrix} .1 = \left(\text{Cos}(\alpha) = \frac{-4}{5}\right) & .2 = \left(\text{Sin}(\beta) = -\frac{2\sqrt{6}}{5}\right) \\ .3 = (\text{Tan}(\beta) = -2\sqrt{6}) & .4 = \left(\text{Sin}(\beta - \alpha) = \frac{8\sqrt{6}}{25} + \frac{3}{25}\right) \\ .5 = \left(\text{Cos}(\alpha - \beta) = -\frac{4}{25} + \frac{6\sqrt{6}}{25}\right) & .6 = \left(\text{Tan}(\alpha + \beta) = -\frac{3}{2} + \frac{\sqrt{6}}{4}\right) \\ .7 = \left(\text{Cos}(2\beta) = \frac{-23}{25}\right) & .8 = \left(\text{Tan}(2\alpha) = \frac{24}{7}\right) \end{bmatrix}, \begin{bmatrix} :) \\ :(\\ M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \\ :) \\ :(\end{bmatrix}$$

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

$$Ans6 = (\text{Sin}(41^o) = (\text{Sqrt}(0.4305) = 0.656)), \begin{bmatrix} M \\ U \\ T \end{bmatrix}$$

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$$Ans1 = \begin{bmatrix} .1 = \left(\mathrm{Sin}\left(\frac{5\pi}{12}\right) = \frac{\sqrt{2}}{4} + \frac{\sqrt{2}\sqrt{3}}{4}\right) & .2 = \left(\mathrm{Cos}(15^{o}) = \frac{\sqrt{2}}{4} + \frac{\sqrt{2}\sqrt{3}}{4}\right) \\ .3 = \left(\mathrm{Tan}\left(\frac{7\pi}{12}\right) = -2-\sqrt{3}\right) & .4 = \left(\mathrm{Csc}\left(\frac{17\pi}{12}\right) = -\sqrt{2}\sqrt{3}+\sqrt{2}\right) \\ .5 = (\mathrm{Tan}(345^{o}) = -2+\sqrt{3}) & .6 = \left(\mathrm{Cos}((-255)^{o}) = \frac{\sqrt{2}}{4} - \frac{\sqrt{2}\sqrt{3}}{4}\right) \\ .7 = \left(\mathrm{Cot}\left(\frac{13\pi}{12}\right) = 2+\sqrt{3}\right) & .8 = (\mathrm{Sec}((-195)^{o}) = -\sqrt{2}\sqrt{3}+\sqrt{2}) \end{bmatrix}, \begin{bmatrix} :) \\ :(\\ M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \\ :) \\ :(\end{bmatrix}$$

$$Ans2 = \begin{bmatrix} .1 = \left(\frac{\mathrm{Tan}\left(\frac{\pi}{3}\right) - \mathrm{Tan}\left(\frac{\pi}{12}\right)}{1+\mathrm{Tan}\left(\frac{\pi}{3}\right)\mathrm{Tan}\left(\frac{\pi}{12}\right)} = \left(\mathrm{Tan}\left(\frac{\pi}{4}\right) = 1\right)\right) & .2 = \left(\mathrm{Cos}(80^{o})\,\mathrm{Cos}(20^{o}) + \mathrm{Sin}(80^{o})\,\mathrm{Sin}(20^{o}) = \left(\mathrm{Cos}(60^{o}) = \frac{1}{2}\right)\right) \\ .3 = \left(\mathrm{Sin}(40^{o})\,\mathrm{Cos}(10^{o}) - \mathrm{Cos}(40^{o})\,\mathrm{Sin}(10^{o}) = \left(\mathrm{Sin}(30^{o}) = \frac{1}{2}\right)\right) & .4 = \left(2\,\mathrm{Cos}(15^{o})^{2} - 1 = \left(\mathrm{Cos}(30^{o}) = \frac{\sqrt{3}}{2}\right)\right) \\ .5 = \left(\frac{2\,\mathrm{Tan}(22.5^{o})}{1-\mathrm{Tan}(22.5^{o})^{2}} = (\mathrm{Tan}(45^{o}) = 1)\right) & .6 = \left(\mathrm{Sin}\left(\frac{\pi}{9}\right)\mathrm{Cos}\left(\frac{2\pi}{9}\right) + \mathrm{Cos}\left(\frac{\pi}{9}\right)\mathrm{Sin}\left(\frac{2\pi}{9}\right) = \left(\mathrm{Sin}\left(\frac{\pi}{3}\right) = \frac{\sqrt{3}}{2}\right)\right) \\ .7 = \left(\mathrm{Cos}\left(\frac{\pi}{8}\right)^{2} - \mathrm{Sin}\left(\frac{\pi}{8}\right)^{2} = \left(\mathrm{Cos}\left(\frac{\pi}{4}\right) = \frac{\sqrt{2}}{2}\right)\right) & .8 = \left(1 - 2\,\mathrm{Sin}(22.5^{o})^{2} = \left(\mathrm{Cos}(45^{o}) = \frac{\sqrt{2}}{2}\right)\right) \\ .9 = \left(\mathrm{Cos}(35^{o})\,\mathrm{Cos}(10^{o}) - \mathrm{Sin}(35^{o})\,\mathrm{Sin}(10^{o}) = \left(\mathrm{Cos}(45^{o}) = \frac{\sqrt{2}}{2}\right)\right) & .10 = \left(2\,\mathrm{Sin}\left(\frac{\pi}{12}\right)\mathrm{Cos}\left(\frac{\pi}{12}\right) = \left(\mathrm{Sin}\left(\frac{\pi}{6}\right) = \frac{1}{2}\right)\right) \end{bmatrix}, \begin{bmatrix} :) \\ :(\\ :) \\ :(\\ \begin{bmatrix}\begin{bmatrix} M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \end{bmatrix}\end{bmatrix} \\ :) \\ :(\\ :) \\ :(\\ :) \\ :(\end{bmatrix}$$

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

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

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

$$Ans1 = \begin{bmatrix} .1 = \left(\text{Sin}(15^o) = \frac{\sqrt{2}\sqrt{3}}{4} - \frac{\sqrt{2}}{4}\right) & .2 = \left(\text{Cos}\left(\frac{5\pi}{12}\right) = \frac{\sqrt{2}\sqrt{3}}{4} - \frac{\sqrt{2}}{4}\right) \\ .3 = (\text{Tan}(105^o) = -2 - \sqrt{3}) & .4 = (\text{Tan}((-285)^o) = 2 + \sqrt{3}) \\ .5 = \left(\text{Cot}\left(\frac{17\pi}{12}\right) = 2 - \sqrt{3}\right) & .6 = \left(\text{Sin}((-255)^o) = \frac{\sqrt{2}}{4} + \frac{\sqrt{2}\sqrt{3}}{4}\right) \\ .7 = \left(\text{Cos}\left(-\frac{7\pi}{12}\right) = \frac{\sqrt{2}}{4} - \frac{\sqrt{2}\sqrt{3}}{4}\right) & .8 = \left(\text{Sec}\left(\frac{23\pi}{12}\right) = \sqrt{2}\sqrt{3} - \sqrt{2}\right) \end{bmatrix}, \; , \begin{bmatrix} :) \\ :(\\ M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \\ :) \\ :(\end{bmatrix}$$

$$Ans2 = \begin{bmatrix} .1 = \left(\frac{\text{Tan}(10^o) + \text{Tan}(50^o)}{1 - \text{Tan}(10^o)\,\text{Tan}(50^o)} = (\text{Tan}(60^o) = \sqrt{3})\right) & .2 = \left(\text{Cos}(35^o)\,\text{Cos}(10^o) - \text{Sin}(35^o)\,\text{Sin}(10^o) = \left(\text{Cos}(45^o) = \frac{\sqrt{2}}{2}\right)\right) \\ .3 = \left(1 - 2\,\text{Sin}\left(\frac{\pi}{12}\right)^2 = \left(\text{Cos}\left(\frac{\pi}{6}\right) = \frac{\sqrt{3}}{2}\right)\right) & .4 = \left(2\,\text{Cos}\left(\frac{\pi}{8}\right)^2 - 1 = \left(\text{Cos}\left(\frac{\pi}{4}\right) = \frac{\sqrt{2}}{2}\right)\right) \\ .5 = \left(\text{Sin}\left(\frac{7\pi}{18}\right)\text{Cos}\left(\frac{\pi}{18}\right) - \text{Cos}\left(\frac{7\pi}{18}\right)\text{Sin}\left(\frac{\pi}{18}\right) = \left(\text{Sin}\left(\frac{\pi}{3}\right) = \frac{\sqrt{3}}{2}\right)\right) & .6 = \left(\text{Cos}(15^o)^2 - \text{Sin}(15^o)^2 = \left(\text{Cos}(30^o) = \frac{\sqrt{3}}{2}\right)\right) \\ .7 = \left(2\,\text{Sin}(22.5^o)\,\text{Cos}(22.5^o) = \left(\text{Sin}(45^o) = \frac{\sqrt{2}}{2}\right)\right) & .8 = \left(\frac{2\,\text{Tan}(15^o)}{1 - \text{Tan}(15^o)^2} = \left(\text{Tan}(30^o) = \frac{\sqrt{3}}{3}\right)\right) \\ .9 = \left(\text{Cos}\left(\frac{13\pi}{36}\right)\text{Cos}\left(\frac{\pi}{9}\right) + \text{Sin}\left(\frac{13\pi}{36}\right)\text{Sin}\left(\frac{\pi}{9}\right) = \left(\text{Cos}\left(\frac{\pi}{4}\right) = \frac{\sqrt{2}}{2}\right)\right) & .10 = \left(\frac{\text{Tan}(35^o) - \text{Tan}(5^o)}{1 + \text{Tan}(35^o)\,\text{Tan}(5^o)} = \left(\text{Tan}(30^o) = \frac{\sqrt{3}}{3}\right)\right) \end{bmatrix}, \; , \begin{bmatrix} :) \\ :(\\ :) \\ :(\\ [[M, a, t, h, @, M, U, T]] \\ :) \\ :(\\ :) \\ :(\\ :) \\ :(\end{bmatrix}$$

$$Ans3 = \begin{bmatrix} .1 = \left(\text{Sin}(\alpha) = \frac{\sqrt{33}}{7}\right) & .2 = \left(\text{Cos}(\beta) = -\frac{\sqrt{3}}{2}\right) \\ .3 = \left(\text{Tan}(\beta) = -\frac{\sqrt{3}}{3}\right) & .4 = \left(\text{Sin}(\beta - \alpha) = \frac{2}{7} + \frac{\sqrt{33}\sqrt{3}}{14}\right) \\ .5 = \left(\text{Cos}(\alpha + \beta) = -\frac{2\sqrt{3}}{7} - \frac{\sqrt{33}}{14}\right) & .6 = \left(\text{Tan}(\alpha - \beta) = \frac{16\sqrt{3}\sqrt{11}}{15} + \frac{49\sqrt{3}}{15}\right) \\ .7 = \left(\text{Cos}(2\beta) = \frac{1}{2}\right) & .8 = \left(\text{Tan}(2\alpha) = -\frac{8\sqrt{33}}{17}\right) \end{bmatrix}, \; , \; Ans4 = \begin{bmatrix} .1 = \left(\text{Cos}(\alpha) = -\frac{\sqrt{3}}{2}\right) & .2 = \left(\text{Sin}(\beta) = -\frac{2\sqrt{14}}{9}\right) \\ .3 = \left(\text{Tan}(\alpha) = \frac{\sqrt{3}}{3}\right) & .4 = \left(\text{Sin}(\alpha - \beta) = -\frac{5}{18} - \frac{\sqrt{3}\sqrt{14}}{9}\right) \\ .5 = \left(\text{Cos}(\beta - \alpha) = -\frac{5\sqrt{3}}{18} + \frac{\sqrt{14}}{9}\right) & .6 = \left(\text{Tan}(\alpha + \beta) = \frac{81\sqrt{3}}{19} - \frac{40\sqrt{14}}{19}\right) \\ .7 = \left(\text{Sin}(2\beta) = -\frac{20\sqrt{14}}{81}\right) & .8 = (\text{Tan}(2\alpha) = \sqrt{3}) \end{bmatrix}, \; , \begin{bmatrix} :) \\ :(\\ M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \\ :) \\ :(\end{bmatrix}$$

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

$$Ans6 = (\text{Cos}(6^o) = (\text{Sqrt}(0.9890) = 0.995)), \; , \begin{bmatrix} M \\ U \\ T \end{bmatrix}$$

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$$Ans1 = \begin{bmatrix} .1 = \left(\text{Cos}\left(\frac{5\pi}{12}\right) = \frac{\sqrt{2}\sqrt{3}}{4} - \frac{\sqrt{2}}{4}\right) & .2 = \left(\text{Sin}(15^o) = \frac{\sqrt{2}\sqrt{3}}{4} - \frac{\sqrt{2}}{4}\right) \\ .3 = \left(\text{Tan}\left(\frac{7\pi}{12}\right) = -2 - \sqrt{3}\right) & .4 = \left(\text{Cos}(195^o) = -\frac{\sqrt{2}}{4} - \frac{\sqrt{2}\sqrt{3}}{4}\right) \\ .5 = \left(\text{Sec}\left(-\frac{\pi}{12}\right) = \sqrt{2}\sqrt{3} - \sqrt{2}\right) & .6 = \left(\text{Tan}\left(-\frac{23\pi}{12}\right) = 2 - \sqrt{3}\right) \\ .7 = (\text{Cot}((-105)^o) = 2 - \sqrt{3}) & .8 = \left(\text{Sin}(165^o) = \frac{\sqrt{2}\sqrt{3}}{4} - \frac{\sqrt{2}}{4}\right) \end{bmatrix}, \begin{bmatrix} \underline{:)} \\ :(\\ M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \\ \underline{:)} \\ :(\end{bmatrix}$$

$$Ans2 = \begin{bmatrix} .1 = \left(\text{Sin}(20^o)\,\text{Cos}(40^o) + \text{Cos}(20^o)\,\text{Sin}(40^o) = \left(\text{Sin}(60^o) = \frac{\sqrt{3}}{2}\right)\right) & .2 = \left(\frac{2\,\text{Tan}(15^o)}{1 - \text{Tan}(15^o)^2} = \left(\text{Tan}(30^o) = \frac{\sqrt{3}}{3}\right)\right) \\ .3 = \left(1 - 2\,\text{Sin}(22.5^o)^2 = \left(\text{Cos}(45^o) = \frac{\sqrt{2}}{2}\right)\right) & .4 = \left(\frac{\text{Tan}\left(\frac{\pi}{12}\right) + \text{Tan}\left(\frac{\pi}{6}\right)}{1 - \text{Tan}\left(\frac{\pi}{12}\right)\text{Tan}\left(\frac{\pi}{6}\right)} = \left(\text{Tan}\left(\frac{\pi}{4}\right) = 1\right)\right) \\ .5 = \left(2\,\text{Sin}(15^o)\,\text{Cos}(15^o) = \left(\text{Sin}(30^o) = \frac{1}{2}\right)\right) & .6 = \left(\text{Sin}(72^o)\,\text{Cos}(12^o) - \text{Cos}(72^o)\,\text{Sin}(12^o) = \left(\text{Sin}(60^o) = \frac{\sqrt{3}}{2}\right)\right) \\ .7 = \left(2\,\text{Cos}\left(\frac{\pi}{12}\right)^2 - 1 = \left(\text{Cos}\left(\frac{\pi}{6}\right) = \frac{\sqrt{3}}{2}\right)\right) & .8 = \left(\text{Cos}\left(\frac{\pi}{8}\right)^2 - \text{Sin}\left(\frac{\pi}{8}\right)^2 = \left(\text{Cos}\left(\frac{\pi}{4}\right) = \frac{\sqrt{2}}{2}\right)\right) \\ .9 = \left(\text{Cos}\left(\frac{\pi}{9}\right)\text{Cos}\left(\frac{\pi}{18}\right) - \text{Sin}\left(\frac{\pi}{9}\right)\text{Sin}\left(\frac{\pi}{18}\right) = \left(\text{Cos}\left(\frac{\pi}{6}\right) = \frac{\sqrt{3}}{2}\right)\right) & .10 = \left(\text{Cos}(35^o)\,\text{Cos}(5^o) + \text{Sin}(35^o)\,\text{Sin}(5^o) = \left(\text{Cos}(30^o) = \frac{\sqrt{3}}{2}\right)\right) \end{bmatrix}, \begin{bmatrix} \underline{:)} \\ :(\\ \underline{:)} \\ :(\\ \begin{bmatrix}\begin{bmatrix} M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \end{bmatrix}\end{bmatrix} \\ \underline{:)} \\ :(\\ \underline{:)} \\ :(\\ \underline{:)} \\ :(\end{bmatrix}$$

$$Ans3 = \begin{bmatrix} .1 = \left(\text{Cos}(\alpha) = \frac{\sqrt{5}}{3}\right) & .2 = \left(\text{Sin}(\beta) = \frac{2\sqrt{6}}{7}\right) \\ .3 = \left(\text{Tan}(\alpha) = \frac{2\sqrt{5}}{5}\right) & .4 = \left(\text{Sin}(\alpha - \beta) = -\frac{10}{21} - \frac{2\sqrt{6}\sqrt{5}}{21}\right) \\ .5 = \left(\text{Cos}(\alpha + \beta) = -\frac{5\sqrt{5}}{21} - \frac{4\sqrt{6}}{21}\right) & .6 = \left(\text{Tan}(\beta - \alpha) = -\frac{90\sqrt{6}}{29} - \frac{98\sqrt{5}}{29}\right) \\ .7 = \left(\text{Cos}(2\alpha) = \frac{1}{9}\right) & .8 = (\text{Tan}(2\beta) = -20\sqrt{6}) \end{bmatrix}, \quad Ans4 = \begin{bmatrix} .1 = \left(\text{Cos}(\alpha) = \frac{\sqrt{5}}{3}\right) & .2 = \left(\text{Sin}(\beta) = \frac{-3}{5}\right) \\ .3 = \left(\text{Tan}(\beta) = \frac{3}{4}\right) & .4 = \left(\text{Sin}(\beta - \alpha) = -\frac{\sqrt{5}}{5} - \frac{8}{15}\right) \\ .5 = \left(\text{Cos}(\alpha + \beta) = -\frac{4\sqrt{5}}{15} - \frac{2}{5}\right) & .6 = \left(\text{Tan}(\alpha - \beta) = -\frac{25\sqrt{5}}{22} - \frac{27}{11}\right) \\ .7 = \left(\text{Cos}(2\beta) = \frac{7}{25}\right) & .8 = (\text{Tan}(2\alpha) = -4\sqrt{5}) \end{bmatrix}, \begin{bmatrix} \underline{:)} \\ :(\\ M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \\ \underline{:)} \\ :(\end{bmatrix}$$

$$Ans5 = (\text{Sin}(16^o) = (\text{Sqrt}(0.0760) = 0.276)), \quad \begin{bmatrix} M \\ U \\ T \end{bmatrix}$$

$$Ans6 = (\text{Cos}(28^o) = (\text{Sqrt}(0.7795) = 0.883)), \quad \begin{bmatrix} M \\ U \\ T \end{bmatrix}$$

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

$$Ans2 = \begin{bmatrix} .1 = \left(\mathrm{Sin}\left(\frac{5\pi}{18}\right)\mathrm{Cos}\left(\frac{\pi}{9}\right) - \mathrm{Cos}\left(\frac{5\pi}{18}\right)\mathrm{Sin}\left(\frac{\pi}{9}\right) = \left(\mathrm{Sin}\left(\frac{\pi}{6}\right) = \frac{1}{2}\right)\right) & .2 = \left(\mathrm{Cos}\left(\frac{\pi}{3}\right)\mathrm{Cos}\left(\frac{\pi}{12}\right) + \mathrm{Sin}\left(\frac{\pi}{3}\right)\mathrm{Sin}\left(\frac{\pi}{12}\right) = \left(\mathrm{Cos}\left(\frac{\pi}{4}\right) = \frac{\sqrt{2}}{2}\right)\right) \\ .3 = \left(\frac{\mathrm{Tan}(25^o) + \mathrm{Tan}(20^o)}{1 - \mathrm{Tan}(25^o)\,\mathrm{Tan}(20^o)} = (\mathrm{Tan}(45^o) = 1)\right) & .4 = \left(2\,\mathrm{Sin}(15^o)\,\mathrm{Cos}(15^o) = \left(\mathrm{Sin}(30^o) = \frac{1}{2}\right)\right) \\ .5 = \left(\mathrm{Cos}(22.5^o)^2 - \mathrm{Sin}(22.5^o)^2 = \left(\mathrm{Cos}(45^o) = \frac{\sqrt{2}}{2}\right)\right) & .6 = \left(1 - 2\,\mathrm{Sin}\left(\frac{\pi}{12}\right)^2 = \left(\mathrm{Cos}\left(\frac{\pi}{6}\right) = \frac{\sqrt{3}}{2}\right)\right) \\ .7 = \left(\mathrm{Sin}(20^o)\,\mathrm{Cos}(40^o) + \mathrm{Cos}(20^o)\,\mathrm{Sin}(40^o) = \left(\mathrm{Sin}(60^o) = \frac{\sqrt{3}}{2}\right)\right) & .8 = \left(2\,\mathrm{Cos}\left(\frac{\pi}{8}\right)^2 - 1 = \left(\mathrm{Cos}\left(\frac{\pi}{4}\right) = \frac{\sqrt{2}}{2}\right)\right) \\ .9 = \left(\frac{2\,\mathrm{Tan}(15^o)}{1 - \mathrm{Tan}(15^o)^2} = \left(\mathrm{Tan}(30^o) = \frac{\sqrt{3}}{3}\right)\right) & .10 = \left(\mathrm{Cos}\left(\frac{\pi}{9}\right)\mathrm{Cos}\left(\frac{\pi}{18}\right) - \mathrm{Sin}\left(\frac{\pi}{9}\right)\mathrm{Sin}\left(\frac{\pi}{18}\right) = \left(\mathrm{Cos}\left(\frac{\pi}{6}\right) = \frac{\sqrt{3}}{2}\right)\right) \end{bmatrix}, \quad , \begin{bmatrix} :) \\ :(\\ :) \\ :(\\ \left[\begin{bmatrix} M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \end{bmatrix}\right] \\ :) \\ :(\\ :) \\ :(\\ :) \\ :(\end{bmatrix}$$

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

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

$$Ans6 = (\mathrm{Sin}(41^o) = (\mathrm{Sqrt}(0.4305) = 0.656)), \quad , \begin{bmatrix} M \\ U \\ T \end{bmatrix}$$

$$Ans1 = \begin{bmatrix} .1 = \left(\text{Cos}(15^o) = \frac{\sqrt{2}}{4} + \frac{\sqrt{2}\sqrt{3}}{4}\right) & .2 = \left(\text{Sin}\left(\frac{7\pi}{12}\right) = \frac{\sqrt{2}}{4} + \frac{\sqrt{2}\sqrt{3}}{4}\right) \\ .3 = \left(\text{Tan}\left(\frac{5\pi}{12}\right) = 2 + \sqrt{3}\right) & .4 = \left(\text{Cot}\left(-\frac{13\pi}{12}\right) = -2 - \sqrt{3}\right) \\ .5 = (\text{Csc}(255^o) = -\sqrt{2}\sqrt{3} + \sqrt{2}) & .6 = \left(\text{Cos}((-165)^o) = -\frac{\sqrt{2}}{4} - \frac{\sqrt{2}\sqrt{3}}{4}\right) \\ .7 = \left(\text{Sec}\left(\frac{23\pi}{12}\right) = \sqrt{2}\sqrt{3} - \sqrt{2}\right) & .8 = (\text{Tan}(195^o) = 2 - \sqrt{3}) \end{bmatrix}, \quad , \begin{bmatrix} :) \\ :(\\ M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \\ :) \\ :(\end{bmatrix}$$

$$Ans2 = \begin{bmatrix} .1 = \left(\left(1 - 2\,\text{Sin}\left(\frac{\pi}{8}\right)\right)^2 = \left(\text{Cos}\left(\frac{\pi}{4}\right) = \frac{\sqrt{2}}{2}\right)\right) & .2 = \left(\text{Sin}\left(\frac{5\pi}{36}\right)\text{Cos}\left(\frac{\pi}{9}\right) + \text{Cos}\left(\frac{5\pi}{36}\right)\text{Sin}\left(\frac{\pi}{9}\right) = \left(\text{Sin}\left(\frac{\pi}{4}\right) = \frac{\sqrt{2}}{2}\right)\right) \\ .3 = \left(\text{Cos}(65^o)\,\text{Cos}(20^o) + \text{Sin}(65^o)\,\text{Sin}(20^o) = \left(\text{Cos}(45^o) = \frac{\sqrt{2}}{2}\right)\right) & .4 = \left(\text{Cos}(18^o)\,\text{Cos}(12^o) - \text{Sin}(18^o)\,\text{Sin}(12^o) = \left(\text{Cos}(30^o) = \frac{\sqrt{3}}{2}\right)\right) \\ .5 = \left(2\,\text{Sin}\left(\frac{\pi}{12}\right)\text{Cos}\left(\frac{\pi}{12}\right) = \left(\text{Sin}\left(\frac{\pi}{6}\right) = \frac{1}{2}\right)\right) & .6 = \left(2\,\text{Cos}(22.5^o)^2 - 1 = \left(\text{Cos}(45^o) = \frac{\sqrt{2}}{2}\right)\right) \\ .7 = (\text{Sin}(100^o)\,\text{Cos}(10^o) - \text{Cos}(100^o)\,\text{Sin}(10^o) = (\text{Sin}(90^o) = 1)) & .8 = \left(\frac{\text{Tan}\left(\frac{4\pi}{15}\right) + \text{Tan}\left(\frac{\pi}{15}\right)}{1 - \text{Tan}\left(\frac{4\pi}{15}\right)\text{Tan}\left(\frac{\pi}{15}\right)} = \left(\text{Tan}\left(\frac{\pi}{3}\right) = \sqrt{3}\right)\right) \\ .9 = \left(\text{Cos}(15^o)^2 - \text{Sin}(15^o)^2 = \left(\text{Cos}(30^o) = \frac{\sqrt{3}}{2}\right)\right) & .10 = \left(\frac{2\,\text{Tan}(22.5^o)}{1 - \text{Tan}(22.5^o)^2} = (\text{Tan}(45^o) = 1)\right) \end{bmatrix}, \quad , \begin{bmatrix} :) \\ :(\\ :) \\ :(\\ \begin{bmatrix}\begin{bmatrix} M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \end{bmatrix}\end{bmatrix} \\ :) \\ :(\\ :) \\ :(\\ :) \\ :(\end{bmatrix}$$

$$Ans3 = \begin{bmatrix} .1 = \left(\text{Cos}(\alpha) = \frac{\sqrt{39}}{8}\right) & .2 = \left(\text{Sin}(\beta) = -\frac{\sqrt{21}}{5}\right) \\ .3 = \left(\text{Tan}(\alpha) = \frac{5\sqrt{39}}{39}\right) & .4 = \left(\text{Sin}(\alpha - \beta) = -\frac{1}{4} + \frac{\sqrt{39}\sqrt{21}}{40}\right) \\ .5 = \left(\text{Cos}(\alpha + \beta) = -\frac{\sqrt{39}}{20} + \frac{\sqrt{21}}{8}\right) & .6 = \left(\text{Tan}(\beta - \alpha) = -\frac{128\sqrt{7}\sqrt{3}}{369} + \frac{125\sqrt{3}\sqrt{13}}{369}\right) \\ .7 = \left(\text{Cos}(2\alpha) = \frac{7}{32}\right) & .8 = \left(\text{Tan}(2\beta) = -\frac{4\sqrt{21}}{17}\right) \end{bmatrix}, \quad Ans4 = \begin{bmatrix} .1 = \left(\text{Sin}(\alpha) = -\frac{\sqrt{3}}{2}\right) & .2 = \left(\text{Cos}(\beta) = -\frac{2\sqrt{2}}{3}\right) \\ .3 = (\text{Tan}(\alpha) = -\sqrt{3}) & .4 = \left(\text{Sin}(\alpha - \beta) = \frac{\sqrt{2}\sqrt{3}}{3} - \frac{1}{6}\right) \\ .5 = \left(\text{Cos}(\beta - \alpha) = -\frac{\sqrt{2}}{3} - \frac{\sqrt{3}}{6}\right) & .6 = \left(\text{Tan}(\alpha + \beta) = -\frac{9\sqrt{3}}{5} - \frac{8\sqrt{2}}{5}\right) \\ .7 = \left(\text{Sin}(2\beta) = -\frac{4\sqrt{2}}{9}\right) & .8 = (\text{Tan}(2\alpha) = \sqrt{3}) \end{bmatrix}, \quad , \begin{bmatrix} :) \\ :(\\ M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \\ :) \\ :(\end{bmatrix}$$

$$Ans5 = (\text{Cos}(29^o) = (\text{Sqrt}(0.7650) = 0.875)), \quad , \begin{bmatrix} M \\ U \\ T \end{bmatrix}$$

$$Ans6 = (\text{Sin}(10^o) = (\text{Sqrt}(0.0300) = 0.174)), \quad , \begin{bmatrix} M \\ U \\ T \end{bmatrix}$$

$$Ans1 = \begin{bmatrix} .1 = \left(\mathrm{Sin}\left(\frac{7\pi}{12}\right) = \frac{\sqrt{2}}{4} + \frac{\sqrt{2}\sqrt{3}}{4}\right) & .2 = \left(\mathrm{Cos}(15^o) = \frac{\sqrt{2}}{4} + \frac{\sqrt{2}\sqrt{3}}{4}\right) \\ .3 = (\mathrm{Tan}(75^o) = 2 + \sqrt{3}) & .4 = \left(\mathrm{Sin}\left(\frac{17\pi}{12}\right) = -\frac{\sqrt{2}}{4} - \frac{\sqrt{2}\sqrt{3}}{4}\right) \\ .5 = (\mathrm{Cot}(345^o) = -2 - \sqrt{3}) & .6 = \left(\mathrm{Cos}\left(-\frac{7\pi}{12}\right) = \frac{\sqrt{2}}{4} - \frac{\sqrt{2}\sqrt{3}}{4}\right) \\ .7 = (\mathrm{Csc}((-75)^o) = -\sqrt{2}\sqrt{3} + \sqrt{2}) & .8 = \left(\mathrm{Tan}\left(\frac{11\pi}{12}\right) = -2 + \sqrt{3}\right) \end{bmatrix}, \quad , \begin{bmatrix} :) \\ :(\\ M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \\ :) \\ :(\end{bmatrix}$$

$$Ans2 = \begin{bmatrix} .1 = \left(\frac{\mathrm{Tan}(35^o) - \mathrm{Tan}(5^o)}{1 + \mathrm{Tan}(35^o)\,\mathrm{Tan}(5^o)} = \left(\mathrm{Tan}(30^o) = \frac{\sqrt{3}}{3}\right)\right) & .2 = \left(2\,\mathrm{Sin}(22.5^o)\,\mathrm{Cos}(22.5^o) = \left(\mathrm{Sin}(45^o) = \frac{\sqrt{2}}{2}\right)\right) \\ .3 = \left(\mathrm{Cos}\left(\frac{\pi}{8}\right)^2 - \mathrm{Sin}\left(\frac{\pi}{8}\right)^2 = \left(\mathrm{Cos}\left(\frac{\pi}{4}\right) = \frac{\sqrt{2}}{2}\right)\right) & .4 = \left(1 - 2\,\mathrm{Sin}(15^o)^2 = \left(\mathrm{Cos}(30^o) = \frac{\sqrt{3}}{2}\right)\right) \\ .5 = \left(\frac{\mathrm{Tan}(48^o) + \mathrm{Tan}(12^o)}{1 - \mathrm{Tan}(48^o)\,\mathrm{Tan}(12^o)} = (\mathrm{Tan}(60^o) = \sqrt{3})\right) & .6 = \left(\frac{2\,\mathrm{Tan}(15^o)}{1 - \mathrm{Tan}(15^o)^2} = \left(\mathrm{Tan}(30^o) = \frac{\sqrt{3}}{3}\right)\right) \\ .7 = \left(2\,\mathrm{Cos}\left(\frac{\pi}{12}\right)^2 - 1 = \left(\mathrm{Cos}\left(\frac{\pi}{6}\right) = \frac{\sqrt{3}}{2}\right)\right) & .8 = \left(\mathrm{Cos}(25^o)\,\mathrm{Cos}(5^o) - \mathrm{Sin}(25^o)\,\mathrm{Sin}(5^o) = \left(\mathrm{Cos}(30^o) = \frac{\sqrt{3}}{2}\right)\right) \\ .9 = \left(\mathrm{Sin}\left(\frac{19\pi}{60}\right)\mathrm{Cos}\left(\frac{\pi}{15}\right) - \mathrm{Cos}\left(\frac{19\pi}{60}\right)\mathrm{Sin}\left(\frac{\pi}{15}\right) = \left(\mathrm{Sin}\left(\frac{\pi}{4}\right) = \frac{\sqrt{2}}{2}\right)\right) & .10 = \left(\mathrm{Cos}\left(\frac{2\pi}{5}\right)\mathrm{Cos}\left(\frac{\pi}{15}\right) + \mathrm{Sin}\left(\frac{2\pi}{5}\right)\mathrm{Sin}\left(\frac{\pi}{15}\right) = \left(\mathrm{Cos}\left(\frac{\pi}{3}\right) = \frac{1}{2}\right)\right) \end{bmatrix}, \quad , \begin{bmatrix} :) \\ :(\\ :) \\ :(\\ \left[\left[\begin{matrix} M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \end{matrix}\right]\right] \\ :) \\ :(\\ :) \\ :(\\ :) \\ :(\end{bmatrix}$$

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

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

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

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$$Ans1 = \begin{bmatrix} .1 = \left(\text{Sin}(75^o) = \frac{\sqrt{2}}{4} + \frac{\sqrt{2}\sqrt{3}}{4}\right) & .2 = \left(\text{Cos}\left(\frac{\pi}{12}\right) = \frac{\sqrt{2}}{4} + \frac{\sqrt{2}\sqrt{3}}{4}\right) \\ .3 = \left(\text{Tan}(105^o) = -2 - \sqrt{3}\right) & .4 = \left(\text{Cot}\left(-\frac{19\pi}{12}\right) = 2 - \sqrt{3}\right) \\ .5 = \left(\text{Sin}(345^o) = \frac{\sqrt{2}}{4} - \frac{\sqrt{2}\sqrt{3}}{4}\right) & .6 = \left(\text{Tan}\left(\frac{17\pi}{12}\right) = 2 + \sqrt{3}\right) \\ .7 = \left(\text{Cos}((-75)^o) = \frac{\sqrt{2}\sqrt{3}}{4} - \frac{\sqrt{2}}{4}\right) & .8 = \left(\text{Sec}\left(\frac{13\pi}{12}\right) = -\sqrt{2}\sqrt{3} + \sqrt{2}\right) \end{bmatrix}, \ , \begin{bmatrix} :) \\ :(\\ M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \\ :) \\ :(\end{bmatrix}$$

$$Ans2 = \begin{bmatrix} .1 = \left(\text{Cos}(15^o)^2 - \text{Sin}(15^o)^2 = \left(\text{Cos}(30^o) = \frac{\sqrt{3}}{2}\right)\right) & .2 = \left(1 - 2\,\text{Sin}(22.5^o)^2 = \left(\text{Cos}(45^o) = \frac{\sqrt{2}}{2}\right)\right) \\ .3 = \left(2\,\text{Sin}\left(\frac{\pi}{12}\right)\text{Cos}\left(\frac{\pi}{12}\right) = \left(\text{Sin}\left(\frac{\pi}{6}\right) = \frac{1}{2}\right)\right) & .4 = \left(\frac{\text{Tan}\left(\frac{4\pi}{15}\right) + \text{Tan}\left(\frac{\pi}{15}\right)}{1 - \text{Tan}\left(\frac{4\pi}{15}\right)\text{Tan}\left(\frac{\pi}{15}\right)} = \left(\text{Tan}\left(\frac{\pi}{3}\right) = \sqrt{3}\right)\right) \\ .5 = \left(\text{Cos}(12^o)\,\text{Cos}(33^o) - \text{Sin}(12^o)\,\text{Sin}(33^o) = \left(\text{Cos}(45^o) = \frac{\sqrt{2}}{2}\right)\right) & .6 = \left(\frac{2\,\text{Tan}(22.5^o)}{1 - \text{Tan}(22.5^o)^2} = (\text{Tan}(45^o) = 1)\right) \\ .7 = \left(\text{Sin}(42^o)\,\text{Cos}(12^o) - \text{Cos}(42^o)\,\text{Sin}(12^o) = \left(\text{Sin}(30^o) = \frac{1}{2}\right)\right) & .8 = \left(\frac{\text{Tan}(80^o) - \text{Tan}(20^o)}{1 + \text{Tan}(80^o)\,\text{Tan}(20^o)} = \left(\text{Tan}(60^o) = \sqrt{3}\right)\right) \\ .9 = \left(2\,\text{Cos}\left(\frac{\pi}{8}\right)^2 - 1 = \left(\text{Cos}\left(\frac{\pi}{4}\right) = \frac{\sqrt{2}}{2}\right)\right) & .10 = \left(\text{Sin}\left(\frac{5\pi}{12}\right)\text{Cos}\left(\frac{\pi}{12}\right) + \text{Cos}\left(\frac{5\pi}{12}\right)\text{Sin}\left(\frac{\pi}{12}\right) = \left(\text{Sin}\left(\frac{\pi}{2}\right) = 1\right)\right) \end{bmatrix}, \ , \begin{bmatrix} :) \\ :(\\ :) \\ :(\\ \left[\left[\begin{matrix} M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \end{matrix}\right]\right] \\ :) \\ :(\\ :) \\ :(\\ :) \\ :(\end{bmatrix}$$

$$Ans3 = \begin{bmatrix} .1 = \left(\text{Sin}(\alpha) = \frac{2\sqrt{6}}{5}\right) & .2 = \left(\text{Cos}(\beta) = -\frac{\sqrt{7}}{4}\right) \\ .3 = \left(\text{Tan}(\beta) = \frac{3\sqrt{7}}{7}\right) & .4 = \left(\text{Sin}(\beta - \alpha) = -\frac{3}{20} + \frac{\sqrt{6}\sqrt{7}}{10}\right) \\ .5 = \left(\text{Cos}(\alpha - \beta) = -\frac{\sqrt{7}}{20} - \frac{3\sqrt{6}}{10}\right) & .6 = \left(\text{Tan}(\alpha + \beta) = -\frac{32\sqrt{6}}{209} - \frac{75\sqrt{7}}{209}\right) \\ .7 = \left(\text{Cos}(2\beta) = \frac{-1}{8}\right) & .8 = \left(\text{Tan}(2\alpha) = -\frac{4\sqrt{6}}{23}\right) \end{bmatrix}, \ , \ Ans4 = \begin{bmatrix} .1 = \left(\text{Cos}(\alpha) = -\frac{\sqrt{55}}{8}\right) & .2 = \left(\text{Sin}(\beta) = -\frac{\sqrt{3}}{2}\right) \\ .3 = \left(\text{Tan}(\beta) = -\sqrt{3}\right) & .4 = \left(\text{Sin}(\beta - \alpha) = \frac{\sqrt{55}\sqrt{3}}{16} - \frac{3}{16}\right) \\ .5 = \left(\text{Cos}(\alpha - \beta) = -\frac{\sqrt{55}}{16} - \frac{3\sqrt{3}}{16}\right) & .6 = \left(\text{Tan}(\alpha + \beta) = -\frac{3\sqrt{55}}{7} - \frac{16\sqrt{3}}{7}\right) \\ .7 = \left(\text{Cos}(2\beta) = \frac{-1}{2}\right) & .8 = \left(\text{Tan}(2\alpha) = -\frac{3\sqrt{55}}{23}\right) \end{bmatrix}, \ , \begin{bmatrix} :) \\ :(\\ M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \\ :) \\ :(\end{bmatrix}$$

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

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

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$$Ans1 = \begin{bmatrix} .1 = \left(\text{Sin}\left(\frac{\pi}{12}\right) = \frac{\sqrt{2}\sqrt{3}}{4} - \frac{\sqrt{2}}{4}\right) & .2 = \left(\text{Cos}(105^o) = \frac{\sqrt{2}}{4} - \frac{\sqrt{2}\sqrt{3}}{4}\right) \\ .3 = (\text{Tan}(75^o) = 2 + \sqrt{3}) & .4 = \left(\text{Sec}\left(-\frac{5\pi}{12}\right) = \sqrt{2}\sqrt{3} + \sqrt{2}\right) \\ .5 = \left(\text{Cos}(165^o) = -\frac{\sqrt{2}}{4} - \frac{\sqrt{2}\sqrt{3}}{4}\right) & .6 = \left(\text{Cot}\left(\frac{13\pi}{12}\right) = 2 + \sqrt{3}\right) \\ .7 = \left(\text{Sin}((-195)^o) = \frac{\sqrt{2}\sqrt{3}}{4} - \frac{\sqrt{2}}{4}\right) & .8 = (\text{Csc}((-345)^o) = \sqrt{2}\sqrt{3} + \sqrt{2}) \end{bmatrix}, \; , \begin{bmatrix} :) \\ :(\\ M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \\ :) \\ :(\end{bmatrix}$$

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

$$Ans3 = \begin{bmatrix} .1 = \left(\text{Sin}(\alpha) = \frac{\sqrt{65}}{9}\right) & .2 = \left(\text{Cos}(\beta) = -\frac{3\sqrt{5}}{7}\right) \\ .3 = \left(\text{Tan}(\alpha) = \frac{\sqrt{65}}{4}\right) & .4 = \left(\text{Sin}(\beta - \alpha) = \frac{8}{63} + \frac{\sqrt{65}\sqrt{5}}{21}\right) \\ .5 = \left(\text{Cos}(\alpha - \beta) = -\frac{4\sqrt{5}}{21} + \frac{2\sqrt{65}}{63}\right) & .6 = \left(\text{Tan}(\alpha + \beta) = \frac{49\sqrt{5}\sqrt{13}}{115} - \frac{243\sqrt{5}}{230}\right) \\ .7 = \left(\text{Cos}(2\beta) = \frac{41}{49}\right) & .8 = \left(\text{Tan}(2\alpha) = -\frac{8\sqrt{65}}{49}\right) \end{bmatrix}, \; , Ans4 = \begin{bmatrix} .1 = \left(\text{Cos}(\alpha) = \frac{2\sqrt{2}}{3}\right) & .2 = \left(\text{Sin}(\beta) = -\frac{\sqrt{5}}{3}\right) \\ .3 = \left(\text{Tan}(\beta) = \frac{\sqrt{5}}{2}\right) & .4 = \left(\text{Sin}(\alpha - \beta) = \frac{2\sqrt{2}\sqrt{5}}{9} + \frac{2}{9}\right) \\ .5 = \left(\text{Cos}(\alpha + \beta) = -\frac{4\sqrt{2}}{9} - \frac{\sqrt{5}}{9}\right) & .6 = \left(\text{Tan}(\beta - \alpha) = \frac{2\sqrt{5}}{3} + \frac{2\sqrt{2}}{3}\right) \\ .7 = \left(\text{Sin}(2\alpha) = -\frac{4\sqrt{2}}{9}\right) & .8 = (\text{Tan}(2\beta) = -4\sqrt{5}) \end{bmatrix}, \; , \begin{bmatrix} :) \\ :(\\ M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \\ :) \\ :(\end{bmatrix}$$

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

$$Ans6 = (\text{Sin}(5^o) = (\text{Sqrt}(0.0075) = 0.087)), \; , \begin{bmatrix} M \\ U \\ T \end{bmatrix}$$

$$Ans1 = \begin{bmatrix} .1 = \left(\mathrm{Sin}\left(\frac{\pi}{12}\right) = \frac{\sqrt{2}\sqrt{3}}{4} - \frac{\sqrt{2}}{4}\right) & .2 = \left(\mathrm{Cos}(75^o) = \frac{\sqrt{2}\sqrt{3}}{4} - \frac{\sqrt{2}}{4}\right) \\ .3 = (\mathrm{Tan}(105^o) = -2 - \sqrt{3}) & .4 = \left(\mathrm{Tan}\left(-\frac{19\pi}{12}\right) = 2 + \sqrt{3}\right) \\ .5 = (\mathrm{Cot}((-165)^o) = 2 + \sqrt{3}) & .6 = \left(\mathrm{Cos}\left(-\frac{\pi}{12}\right) = \frac{\sqrt{2}}{4} + \frac{\sqrt{2}\sqrt{3}}{4}\right) \\ .7 = (\mathrm{Csc}((-195)^o) = \sqrt{2}\sqrt{3} + \sqrt{2}) & .8 = \left(\mathrm{Sin}((-255)^o) = \frac{\sqrt{2}}{4} + \frac{\sqrt{2}\sqrt{3}}{4}\right) \end{bmatrix}, , \begin{bmatrix} \underline{:)} \\ :(\\ M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \\ \underline{:)} \\ :(\end{bmatrix}$$

$$Ans2 = \begin{bmatrix} .1 = \left(\mathrm{Sin}\left(\frac{11\pi}{36}\right)\mathrm{Cos}\left(\frac{\pi}{18}\right) - \mathrm{Cos}\left(\frac{11\pi}{36}\right)\mathrm{Sin}\left(\frac{\pi}{18}\right) = \left(\mathrm{Sin}\left(\frac{\pi}{4}\right) = \frac{\sqrt{2}}{2}\right)\right) & .2 = \left(1 - 2\,\mathrm{Sin}(22.5^o)^2 = \left(\mathrm{Cos}(45^o) = \frac{\sqrt{2}}{2}\right)\right) \\ .3 = \left(2\,\mathrm{Sin}\left(\frac{\pi}{8}\right)\mathrm{Cos}\left(\frac{\pi}{8}\right) = \left(\mathrm{Sin}\left(\frac{\pi}{4}\right) = \frac{\sqrt{2}}{2}\right)\right) & .4 = \left(\frac{2\,\mathrm{Tan}\left(\frac{\pi}{12}\right)}{1 - \mathrm{Tan}\left(\frac{\pi}{12}\right)^2} = \left(\mathrm{Tan}\left(\frac{\pi}{6}\right) = \mathrm{Tan}\left(\frac{\pi}{6}\right)\right)\right) \\ .5 = \left(\frac{\mathrm{Tan}(12^o) + \mathrm{Tan}(33^o)}{1 - \mathrm{Tan}(12^o)\,\mathrm{Tan}(33^o)} = (\mathrm{Tan}(45^o) = 1)\right) & .6 = \left(\frac{\mathrm{Tan}(70^o) - \mathrm{Tan}(10^o)}{1 + \mathrm{Tan}(70^o)\,\mathrm{Tan}(10^o)} = (\mathrm{Tan}(60^o) = \sqrt{3})\right) \\ .7 = \left(\mathrm{Cos}\left(\frac{\pi}{12}\right)^2 - \mathrm{Sin}\left(\frac{\pi}{12}\right)^2 = \left(\mathrm{Cos}\left(\frac{\pi}{6}\right) = \frac{\sqrt{3}}{2}\right)\right) & .8 = \left(2\,\mathrm{Cos}(15^o)^2 - 1 = \left(\mathrm{Cos}(30^o) = \frac{\sqrt{3}}{2}\right)\right) \\ .9 = \left(\mathrm{Cos}(10^o)\,\mathrm{Cos}(50^o) - \mathrm{Sin}(10^o)\,\mathrm{Sin}(50^o) = \left(\mathrm{Cos}(60^o) = \frac{1}{2}\right)\right) & .10 = \left(\mathrm{Sin}\left(\frac{\pi}{18}\right)\mathrm{Cos}\left(\frac{\pi}{9}\right) + \mathrm{Cos}\left(\frac{\pi}{18}\right)\mathrm{Sin}\left(\frac{\pi}{9}\right) = \left(\mathrm{Sin}\left(\frac{\pi}{6}\right) = \frac{1}{2}\right)\right) \end{bmatrix}, , \begin{bmatrix} \underline{:)} \\ :(\\ \underline{:)} \\ :(\\ \left[\left[\begin{matrix} M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \end{matrix}\right]\right] \\ \underline{:)} \\ :(\\ \underline{:)} \\ :(\\ \underline{:)} \\ :(\end{bmatrix}$$

$$Ans3 = \begin{bmatrix} .1 = \left(\mathrm{Cos}(\alpha) = \frac{\sqrt{3}}{2}\right) & .2 = \left(\mathrm{Sin}(\beta) = \frac{2\sqrt{10}}{7}\right) \\ .3 = \left(\mathrm{Tan}(\alpha) = \frac{\sqrt{3}}{3}\right) & .4 = \left(\mathrm{Sin}(\alpha - \beta) = -\frac{3}{14} - \frac{\sqrt{3}\sqrt{10}}{7}\right) \\ .5 = \left(\mathrm{Cos}(\beta - \alpha) = \frac{\sqrt{10}}{7} - \frac{3\sqrt{3}}{14}\right) & .6 = \left(\mathrm{Tan}(\alpha + \beta) = -\frac{49\sqrt{3}}{13} + \frac{24\sqrt{10}}{13}\right) \\ .7 = \left(\mathrm{Cos}(2\alpha) = \frac{1}{2}\right) & .8 = \left(\mathrm{Tan}(2\beta) = \frac{12\sqrt{10}}{31}\right) \end{bmatrix}, , Ans4 = \begin{bmatrix} .1 = \left(\mathrm{Sin}(\alpha) = -\frac{2\sqrt{6}}{7}\right) & .2 = \left(\mathrm{Cos}(\beta) = \frac{\sqrt{11}}{6}\right) \\ .3 = \left(\mathrm{Tan}(\alpha) = \frac{2\sqrt{6}}{5}\right) & .4 = \left(\mathrm{Sin}(\beta - \alpha) = \frac{25}{42} + \frac{\sqrt{6}\sqrt{11}}{21}\right) \\ .5 = \left(\mathrm{Cos}(\alpha + \beta) = -\frac{5\sqrt{11}}{42} - \frac{5\sqrt{6}}{21}\right) & .6 = \left(\mathrm{Tan}(\alpha - \beta) = -\frac{72\sqrt{6}}{65} - \frac{49\sqrt{11}}{65}\right) \\ .7 = \left(\mathrm{Sin}(2\alpha) = \frac{20\sqrt{6}}{49}\right) & .8 = \left(\mathrm{Tan}(2\beta) = \frac{5\sqrt{11}}{7}\right) \end{bmatrix}, , \begin{bmatrix} \underline{:)} \\ :(\\ M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \\ \underline{:)} \\ :(\end{bmatrix}$$

$$Ans5 = (\mathrm{Sin}(40^o) = (\mathrm{Sqrt}(0.4130) = 0.643)), \quad , \begin{bmatrix} M \\ U \\ T \end{bmatrix}$$

$$Ans6 = (\mathrm{Cos}(15^o) = (\mathrm{Sqrt}(0.9330) = 0.966)), \quad , \begin{bmatrix} M \\ U \\ T \end{bmatrix}$$

$$Ans1 = \begin{bmatrix} .1 = \left(Cos(75^o) = \frac{\sqrt{2}\sqrt{3}}{4} - \frac{\sqrt{2}}{4}\right) & .2 = \left(Sin\left(\frac{7\pi}{12}\right) = \frac{\sqrt{2}}{4} + \frac{\sqrt{2}\sqrt{3}}{4}\right) \\ .3 = \left(Tan\left(\frac{\pi}{12}\right) = 2 - \sqrt{3}\right) & .4 = \left(Csc\left(\frac{13\pi}{12}\right) = -\sqrt{2}\sqrt{3} - \sqrt{2}\right) \\ .5 = \left(Cos((-105)^o) = \frac{\sqrt{2}}{4} - \frac{\sqrt{2}\sqrt{3}}{4}\right) & .6 = \left(Tan\left(-\frac{23\pi}{12}\right) = 2 - \sqrt{3}\right) \\ .7 = (Cot((-15)^o) = -2 - \sqrt{3}) & .8 = \left(Sin\left(\frac{17\pi}{12}\right) = -\frac{\sqrt{2}}{4} - \frac{\sqrt{2}\sqrt{3}}{4}\right) \end{bmatrix}, \quad , \begin{bmatrix} :) \\ :(\\ M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \\ :) \\ :(\end{bmatrix}$$

$$Ans2 = \begin{bmatrix} .1 = \left(2\,Cos\left(\frac{\pi}{12}\right)^2 - 1 = \left(Cos\left(\frac{\pi}{6}\right) = \frac{\sqrt{3}}{2}\right)\right) & .2 = \left(\frac{2\,Tan\left(\frac{\pi}{8}\right)}{1 - Tan\left(\frac{\pi}{8}\right)^2} = \left(Tan\left(\frac{\pi}{4}\right) = Tan\left(\frac{\pi}{4}\right)\right)\right) \\ .3 = \left(Cos(22.5^o)^2 - Sin(22.5^o)^2 = \left(Cos(45^o) = \frac{\sqrt{2}}{2}\right)\right) & .4 = \left(Cos(72^o)\,Cos(12^o) + Sin(72^o)\,Sin(12^o) = \left(Cos(60^o) = \frac{1}{2}\right)\right) \\ .5 = \left(\frac{Tan\left(\frac{\pi}{9}\right) + Tan\left(\frac{5\pi}{36}\right)}{1 - Tan\left(\frac{\pi}{9}\right)Tan\left(\frac{5\pi}{36}\right)} = \left(Tan\left(\frac{\pi}{4}\right) = 1\right)\right) & .6 = \left(1 - 2\,Sin(15^o)^2 = \left(Cos(30^o) = \frac{\sqrt{3}}{2}\right)\right) \\ .7 = \left(\frac{Tan\left(\frac{7\pi}{30}\right) - Tan\left(\frac{\pi}{15}\right)}{1 + Tan\left(\frac{7\pi}{30}\right)Tan\left(\frac{\pi}{15}\right)} = \left(Tan\left(\frac{\pi}{6}\right) = \frac{\sqrt{3}}{3}\right)\right) & .8 = \left(2\,Sin\left(\frac{\pi}{8}\right)Cos\left(\frac{\pi}{8}\right) = \left(Sin\left(\frac{\pi}{4}\right) = \frac{\sqrt{2}}{2}\right)\right) \\ .9 = (Cos(15^o)\,Cos(75^o) - Sin(15^o)\,Sin(75^o) = (Cos(90^o) = 0)) & .10 = \left(Sin(60^o)\,Cos(15^o) - Cos(60^o)\,Sin(15^o) = \left(Sin(45^o) = \frac{\sqrt{2}}{2}\right)\right) \end{bmatrix}, \quad , \begin{bmatrix} :) \\ :(\\ :) \\ :(\\ \left[\left[\begin{matrix} M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \end{matrix}\right]\right] \\ :) \\ :(\\ :) \\ :(\\ :) \\ :(\end{bmatrix}$$

$$Ans3 = \begin{bmatrix} .1 = \left(Sin(\alpha) = \frac{\sqrt{3}}{2}\right) & .2 = \left(Cos(\beta) = -\frac{\sqrt{55}}{8}\right) \\ .3 = \left(Tan(\beta) = -\frac{3\sqrt{55}}{55}\right) & .4 = \left(Sin(\alpha - \beta) = -\frac{\sqrt{55}\sqrt{3}}{16} - \frac{3}{16}\right) \\ .5 = \left(Cos(\alpha + \beta) = -\frac{\sqrt{55}}{16} - \frac{3\sqrt{3}}{16}\right) & .6 = \left(Tan(\beta - \alpha) = -\frac{3\sqrt{55}}{7} - \frac{16\sqrt{3}}{7}\right) \\ .7 = \left(Cos(2\beta) = \frac{23}{32}\right) & .8 = (Tan(2\alpha) = -\sqrt{3}) \end{bmatrix}, \quad , Ans4 = \begin{bmatrix} .1 = \left(Cos(\alpha) = \frac{\sqrt{39}}{8}\right) & .2 = \left(Sin(\beta) = -\frac{\sqrt{3}}{2}\right) \\ .3 = \left(Tan(\alpha) = -\frac{5\sqrt{39}}{39}\right) & .4 = \left(Sin(\alpha + \beta) = \frac{5}{16} - \frac{\sqrt{3}\sqrt{39}}{16}\right) \\ .5 = \left(Cos(\alpha - \beta) = -\frac{\sqrt{39}}{16} + \frac{5\sqrt{3}}{16}\right) & .6 = \left(Tan(\beta - \alpha) = -\frac{16\sqrt{3}}{9} - \frac{5\sqrt{3}\sqrt{13}}{9}\right) \\ .7 = \left(Sin(2\alpha) = -\frac{5\sqrt{39}}{32}\right) & .8 = (Tan(2\beta) = -\sqrt{3}) \end{bmatrix}, \quad , \begin{bmatrix} :) \\ :(\\ M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \\ :) \\ :(\end{bmatrix}$$

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

$$Ans6 = (Sin(32^o) = (Sqrt(0.2810) = 0.530)), \quad , \begin{bmatrix} M \\ U \\ T \end{bmatrix}$$

TrigonometryExercise4 Answers for No.11154

$$Ans1 = \begin{bmatrix} .1 = \left(\mathrm{Cos}\left(\frac{7\pi}{12}\right) = \frac{\sqrt{2}}{4} - \frac{\sqrt{2}\sqrt{3}}{4}\right) & .2 = \left(\mathrm{Sin}(15^o) = \frac{\sqrt{2}\sqrt{3}}{4} - \frac{\sqrt{2}}{4}\right) \\ .3 = \left(\mathrm{Tan}\left(\frac{5\pi}{12}\right) = 2 + \sqrt{3}\right) & .4 = \left(\mathrm{Tan}\left(\frac{23\pi}{12}\right) = -2 + \sqrt{3}\right) \\ .5 = \left(\mathrm{Cos}((\text{-}285)^o) = \frac{\sqrt{2}\sqrt{3}}{4} - \frac{\sqrt{2}}{4}\right) & .6 = \left(\mathrm{Cot}\left(-\frac{17\pi}{12}\right) = -2 + \sqrt{3}\right) \\ .7 = (\mathrm{Csc}((\text{-}345)^o) = \sqrt{2}\sqrt{3} + \sqrt{2}) & .8 = \left(\mathrm{Sin}\left(-\frac{13\pi}{12}\right) = \frac{\sqrt{2}\sqrt{3}}{4} - \frac{\sqrt{2}}{4}\right) \end{bmatrix}, \begin{bmatrix} :) \\ :(\\ M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \\ :) \\ :(\end{bmatrix}$$

$$Ans2 = \begin{bmatrix} .1 = \left(\left(1 - 2\,\mathrm{Sin}(22.5^o)\right)^2 = \left(\mathrm{Cos}(45^o) = \frac{\sqrt{2}}{2}\right)\right) & .2 = \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) \\ .3 = \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) & .4 = \left(\mathrm{Sin}\left(\frac{11\pi}{18}\right)\mathrm{Cos}\left(\frac{\pi}{9}\right) - \mathrm{Cos}\left(\frac{11\pi}{18}\right)\mathrm{Sin}\left(\frac{\pi}{9}\right) = \left(\mathrm{Sin}\left(\frac{\pi}{2}\right) = 1\right)\right) \\ .5 = \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) & .6 = (\mathrm{Cos}(10^o)\,\mathrm{Cos}(80^o) - \mathrm{Sin}(10^o)\,\mathrm{Sin}(80^o) = (\mathrm{Cos}(90^o) = 0)) \\ .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}(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) \\ .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(2\,\mathrm{Cos}(15^o)^2 - 1 = \left(\mathrm{Cos}(30^o) = \frac{\sqrt{3}}{2}\right)\right) \end{bmatrix}, \begin{bmatrix} :) \\ :(\\ :) \\ :(\\ \left[\left[\begin{bmatrix} M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \end{bmatrix}\right]\right] \\ :) \\ :(\\ :) \\ :(\\ :) \\ :(\end{bmatrix}$$

$$Ans3 = \begin{bmatrix} .1 = \left(\mathrm{Cos}(\alpha) = \frac{3}{5}\right) & .2 = \left(\mathrm{Sin}(\beta) = -\frac{\sqrt{35}}{6}\right) \\ .3 = \left(\mathrm{Tan}(\alpha) = \frac{4}{3}\right) & .4 = \left(\mathrm{Sin}(\beta - \alpha) = -\frac{\sqrt{35}}{10} - \frac{2}{15}\right) \\ .5 = \left(\mathrm{Cos}(\alpha - \beta) = \frac{1}{10} - \frac{2\sqrt{35}}{15}\right) & .6 = \left(\mathrm{Tan}(\alpha + \beta) = -\frac{432}{551} + \frac{25\sqrt{35}}{551}\right) \\ .7 = \left(\mathrm{Cos}(2\,\alpha) = \frac{-7}{25}\right) & .8 = \left(\mathrm{Tan}(2\,\beta) = \frac{\sqrt{35}}{17}\right) \end{bmatrix}, Ans4 = \begin{bmatrix} .1 = \left(\mathrm{Cos}(\alpha) = -\frac{2\sqrt{6}}{7}\right) & .2 = \left(\mathrm{Sin}(\beta) = \frac{4}{5}\right) \\ .3 = \left(\mathrm{Tan}(\alpha) = \frac{5\sqrt{6}}{12}\right) & .4 = \left(\mathrm{Sin}(\alpha + \beta) = \frac{3}{7} - \frac{8\sqrt{6}}{35}\right) \\ .5 = \left(\mathrm{Cos}(\beta - \alpha) = \frac{6\sqrt{6}}{35} - \frac{4}{7}\right) & .6 = \left(\mathrm{Tan}(\alpha - \beta) = -\frac{125\sqrt{6}}{92} - \frac{147}{46}\right) \\ .7 = \left(\mathrm{Cos}(2\,\beta) = \frac{-7}{25}\right) & .8 = (\mathrm{Tan}(2\,\alpha) = -20\sqrt{6}) \end{bmatrix}, \begin{bmatrix} :) \\ :(\\ M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \\ :) \\ :(\end{bmatrix}$$

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

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

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TrigonometryExercise4 Answers for No.11191

$$Ans1 = \begin{bmatrix} .1 = \left(\text{Cos}\left(\frac{7\pi}{12}\right) = \frac{\sqrt{2}}{4} - \frac{\sqrt{2}\sqrt{3}}{4}\right) & .2 = \left(\text{Sin}(15^o) = \frac{\sqrt{2}\sqrt{3}}{4} - \frac{\sqrt{2}}{4}\right) \\ .3 = (\text{Tan}(75^o) = 2 + \sqrt{3}) & .4 = \left(\text{Cos}(345^o) = \frac{\sqrt{2}}{4} + \frac{\sqrt{2}\sqrt{3}}{4}\right) \\ .5 = \left(\text{Cot}\left(\frac{19\pi}{12}\right) = -2 + \sqrt{3}\right) & .6 = (\text{Sec}((-165)^o) = -\sqrt{2}\sqrt{3} + \sqrt{2}) \\ .7 = \left(\text{Sin}\left(\frac{11\pi}{12}\right) = \frac{\sqrt{2}\sqrt{3}}{4} - \frac{\sqrt{2}}{4}\right) & .8 = \left(\text{Tan}\left(\frac{17\pi}{12}\right) = 2 + \sqrt{3}\right) \end{bmatrix}, \; , \begin{bmatrix} :) \\ :(\\ M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \\ :) \\ :(\end{bmatrix}$$

$$Ans2 = \begin{bmatrix} .1 = \left(\frac{\text{Tan}\left(\frac{\pi}{3}\right) - \text{Tan}\left(\frac{\pi}{12}\right)}{1 + \text{Tan}\left(\frac{\pi}{3}\right)\text{Tan}\left(\frac{\pi}{12}\right)} = \left(\text{Tan}\left(\frac{\pi}{4}\right) = 1\right)\right) & .2 = \left(\text{Sin}(85^o)\text{Cos}(25^o) - \text{Cos}(85^o)\text{Sin}(25^o) = \left(\text{Sin}(60^o) = \frac{\sqrt{3}}{2}\right)\right) \\ .3 = (\text{Cos}(70^o)\text{Cos}(20^o) - \text{Sin}(70^o)\text{Sin}(20^o) = (\text{Cos}(90^o) = 0)) & .4 = (\text{Cos}(100^o)\text{Cos}(10^o) + \text{Sin}(100^o)\text{Sin}(10^o) = (\text{Cos}(90^o) = 0)) \\ .5 = \left(\frac{\text{Tan}\left(\frac{\pi}{9}\right) + \text{Tan}\left(\frac{5\pi}{36}\right)}{1 - \text{Tan}\left(\frac{\pi}{9}\right)\text{Tan}\left(\frac{5\pi}{36}\right)} = \left(\text{Tan}\left(\frac{\pi}{4}\right) = 1\right)\right) & .6 = \left(\frac{2\,\text{Tan}\left(\frac{\pi}{8}\right)}{1 - \text{Tan}\left(\frac{\pi}{8}\right)^2} = \left(\text{Tan}\left(\frac{\pi}{4}\right) = \text{Tan}\left(\frac{\pi}{4}\right)\right)\right) \\ .7 = \left(2\,\text{Sin}\left(\frac{\pi}{12}\right)\text{Cos}\left(\frac{\pi}{12}\right) = \left(\text{Sin}\left(\frac{\pi}{6}\right) = \frac{1}{2}\right)\right) & .8 = \left(\text{Cos}(15^o)^2 - \text{Sin}(15^o)^2 = \left(\text{Cos}(30^o) = \frac{\sqrt{3}}{2}\right)\right) \\ .9 = \left(1 - 2\,\text{Sin}(22.5^o)^2 = \left(\text{Cos}(45^o) = \frac{\sqrt{2}}{2}\right)\right) & .10 = \left(2\,\text{Cos}\left(\frac{\pi}{8}\right)^2 - 1 = \left(\text{Cos}\left(\frac{\pi}{4}\right) = \frac{\sqrt{2}}{2}\right)\right) \end{bmatrix}, \; , \begin{bmatrix} :) \\ :(\\ :) \\ :(\\ \left[\left[\begin{matrix} M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \end{matrix}\right]\right] \\ :) \\ :(\\ :) \\ :(\\ :) \\ :(\end{bmatrix}$$

$$Ans3 = \begin{bmatrix} .1 = \left(\text{Cos}(\alpha) = \frac{\sqrt{65}}{9}\right) & .2 = \left(\text{Sin}(\beta) = -\frac{\sqrt{7}}{4}\right) \\ .3 = \left(\text{Tan}(\alpha) = \frac{4\sqrt{65}}{65}\right) & .4 = \left(\text{Sin}(\beta - \alpha) = -\frac{\sqrt{65}\sqrt{7}}{36} - \frac{1}{3}\right) \\ .5 = \left(\text{Cos}(\alpha - \beta) = \frac{\sqrt{65}}{12} - \frac{\sqrt{7}}{9}\right) & .6 = \left(\text{Tan}(\alpha + \beta) = \frac{64\sqrt{65}}{473} - \frac{243\sqrt{7}}{473}\right) \\ .7 = \left(\text{Sin}(2\beta) = -\frac{3\sqrt{7}}{8}\right) & .8 = \left(\text{Tan}(2\alpha) = \frac{8\sqrt{65}}{49}\right) \end{bmatrix}, \; , Ans4 = \begin{bmatrix} .1 = \left(\text{Cos}(\alpha) = -\frac{\sqrt{33}}{7}\right) & .2 = \left(\text{Sin}(\beta) = \frac{\sqrt{11}}{6}\right) \\ .3 = \left(\text{Tan}(\alpha) = \frac{4\sqrt{33}}{33}\right) & .4 = \left(\text{Sin}(\alpha + \beta) = \frac{10}{21} - \frac{\sqrt{33}\sqrt{11}}{42}\right) \\ .5 = \left(\text{Cos}(\beta - \alpha) = \frac{5\sqrt{33}}{42} - \frac{2\sqrt{11}}{21}\right) & .6 = \left(\text{Tan}(\alpha - \beta) = \frac{144\sqrt{3}\sqrt{11}}{649} + \frac{245\sqrt{11}}{649}\right) \\ .7 = \left(\text{Sin}(2\beta) = -\frac{5\sqrt{11}}{18}\right) & .8 = \left(\text{Tan}(2\alpha) = \frac{8\sqrt{33}}{17}\right) \end{bmatrix}, \; , \begin{bmatrix} :) \\ :(\\ M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \\ :) \\ :(\end{bmatrix}$$

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

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

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$$Ans1 = \begin{bmatrix} .1 = \left(\mathrm{Cos}\left(\frac{7\pi}{12}\right) = \frac{\sqrt{2}}{4} - \frac{\sqrt{2}\sqrt{3}}{4}\right) & .2 = \left(\mathrm{Sin}(15^{o}) = \frac{\sqrt{2}\sqrt{3}}{4} - \frac{\sqrt{2}}{4}\right) \\ .3 = (\mathrm{Tan}(75^{o}) = 2+\sqrt{3}) & .4 = (\mathrm{Tan}(195^{o}) = 2-\sqrt{3}) \\ .5 = \left(\mathrm{Sin}\left(\frac{23\pi}{12}\right) = \frac{\sqrt{2}}{4} - \frac{\sqrt{2}\sqrt{3}}{4}\right) & .6 = \left(\mathrm{Csc}\left(-\frac{13\pi}{12}\right) = \sqrt{2}\sqrt{3}+\sqrt{2}\right) \\ .7 = (\mathrm{Sec}((-75)^{o}) = \sqrt{2}\sqrt{3}+\sqrt{2}) & .8 = \left(\mathrm{Cot}\left(-\frac{23\pi}{12}\right) = 2+\sqrt{3}\right) \end{bmatrix}, \quad , \begin{bmatrix} :) \\ :(\\ M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \\ :) \\ :(\end{bmatrix}$$

$$Ans2 = \begin{bmatrix} .1 = \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) & .2 = \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) \\ .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(2\,\mathrm{Cos}(15^{o})^{2} - 1 = \left(\mathrm{Cos}(30^{o}) = \frac{\sqrt{3}}{2}\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(\mathrm{Sin}\left(\frac{5\pi}{18}\right)\mathrm{Cos}\left(\frac{\pi}{18}\right) + \mathrm{Cos}\left(\frac{5\pi}{18}\right)\mathrm{Sin}\left(\frac{\pi}{18}\right) = \left(\mathrm{Sin}\left(\frac{\pi}{3}\right) = \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 = (\mathrm{Cos}(102^{o})\,\mathrm{Cos}(12^{o}) + \mathrm{Sin}(102^{o})\,\mathrm{Sin}(12^{o}) = (\mathrm{Cos}(90^{o}) = 0)) \\ .9 = \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) & .10 = \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) \end{bmatrix}, \quad , \begin{bmatrix} :) \\ :(\\ :) \\ :(\\ \left[\left[\begin{matrix} M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \end{matrix}\right]\right] \\ :) \\ :(\\ :) \\ :(\\ :) \\ :(\end{bmatrix}$$

$$Ans3 = \begin{bmatrix} .1 = \left(\mathrm{Cos}(\alpha) = \frac{\sqrt{33}}{7}\right) & .2 = \left(\mathrm{Sin}(\beta) = \frac{-4}{5}\right) \\ .3 = \left(\mathrm{Tan}(\beta) = \frac{4}{3}\right) & .4 = \left(\mathrm{Sin}(\alpha-\beta) = -\frac{12}{35} + \frac{4\sqrt{33}}{35}\right) \\ .5 = \left(\mathrm{Cos}(\alpha+\beta) = -\frac{3\sqrt{33}}{35} + \frac{16}{35}\right) & .6 = \left(\mathrm{Tan}(\beta-\alpha) = \frac{588}{41} - \frac{100\sqrt{33}}{41}\right) \\ .7 = \left(\mathrm{Cos}(2\,\alpha) = \frac{17}{49}\right) & .8 = \left(\mathrm{Tan}(2\,\beta) = \frac{-24}{7}\right) \end{bmatrix}, \quad , Ans4 = \begin{bmatrix} .1 = \left(\mathrm{Sin}(\alpha) = -\frac{\sqrt{39}}{8}\right) & .2 = \left(\mathrm{Cos}(\beta) = -\frac{2\sqrt{2}}{3}\right) \\ .3 = \left(\mathrm{Tan}(\alpha) = -\frac{\sqrt{39}}{5}\right) & .4 = \left(\mathrm{Sin}(\alpha-\beta) = \frac{\sqrt{39}\sqrt{2}}{12} - \frac{5}{24}\right) \\ .5 = \left(\mathrm{Cos}(\alpha+\beta) = -\frac{5\sqrt{2}}{12} + \frac{\sqrt{39}}{24}\right) & .6 = \left(\mathrm{Tan}(\beta-\alpha) = -\frac{128\sqrt{2}}{161} + \frac{45\sqrt{39}}{161}\right) \\ .7 = \left(\mathrm{Cos}(2\,\beta) = \frac{7}{9}\right) & .8 = \left(\mathrm{Tan}(2\,\alpha) = \frac{5\sqrt{39}}{7}\right) \end{bmatrix}, \quad , \begin{bmatrix} :) \\ :(\\ M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \\ :) \\ :(\end{bmatrix}$$

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

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

$$Ans1 = \begin{bmatrix} .1 = \left(\operatorname{Cos}\left(\frac{\pi}{12}\right) = \frac{\sqrt{2}}{4} + \frac{\sqrt{2}\sqrt{3}}{4}\right) & .2 = \left(\operatorname{Sin}(75^o) = \frac{\sqrt{2}}{4} + \frac{\sqrt{2}\sqrt{3}}{4}\right) \\ .3 = (\operatorname{Tan}(105^o) = -2 - \sqrt{3}) & .4 = (\operatorname{Sec}((\text{-}195)^o) = -\sqrt{2}\sqrt{3} + \sqrt{2}) \\ .5 = \left(\operatorname{Cot}\left(-\frac{11\pi}{12}\right) = 2 + \sqrt{3}\right) & .6 = \left(\operatorname{Cos}(345^o) = \frac{\sqrt{2}}{4} + \frac{\sqrt{2}\sqrt{3}}{4}\right) \\ .7 = \left(\operatorname{Sin}\left(\frac{13\pi}{12}\right) = \frac{\sqrt{2}}{4} - \frac{\sqrt{2}\sqrt{3}}{4}\right) & .8 = (\operatorname{Tan}(165^o) = -2 + \sqrt{3}) \end{bmatrix}, \begin{bmatrix} \frac{:)}{:(} \\ M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \\ \frac{:)}{:(} \end{bmatrix}$$

$$Ans2 = \begin{bmatrix} .1 = \left(1 - 2\operatorname{Sin}(15^o)^2 = \left(\operatorname{Cos}(30^o) = \frac{\sqrt{3}}{2}\right)\right) & .2 = \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) \\ .3 = \left(\frac{\operatorname{Tan}(25^o) + \operatorname{Tan}(20^o)}{1 - \operatorname{Tan}(25^o)\operatorname{Tan}(20^o)} = (\operatorname{Tan}(45^o) = 1)\right) & .4 = \left(\operatorname{Cos}\left(\frac{\pi}{9}\right)\operatorname{Cos}\left(\frac{\pi}{18}\right) - \operatorname{Sin}\left(\frac{\pi}{9}\right)\operatorname{Sin}\left(\frac{\pi}{18}\right) = \left(\operatorname{Cos}\left(\frac{\pi}{6}\right) = \frac{\sqrt{3}}{2}\right)\right) \\ .5 = \left(2\operatorname{Cos}(22.5^o)^2 - 1 = \left(\operatorname{Cos}(45^o) = \frac{\sqrt{2}}{2}\right)\right) & .6 = \left(\operatorname{Cos}\left(\frac{4\pi}{9}\right)\operatorname{Cos}\left(\frac{\pi}{9}\right) + \operatorname{Sin}\left(\frac{4\pi}{9}\right)\operatorname{Sin}\left(\frac{\pi}{9}\right) = \left(\operatorname{Cos}\left(\frac{\pi}{3}\right) = \frac{1}{2}\right)\right) \\ .7 = \left(\operatorname{Sin}(20^o)\operatorname{Cos}(40^o) + \operatorname{Cos}(20^o)\operatorname{Sin}(40^o) = \left(\operatorname{Sin}(60^o) = \frac{\sqrt{3}}{2}\right)\right) & .8 = \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) \\ .9 = \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) & .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} \frac{:)}{:(} \\ \frac{:)}{:(} \\ \begin{bmatrix}\begin{bmatrix} M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \end{bmatrix}\end{bmatrix} \\ \frac{:)}{:(} \\ \frac{:)}{:(} \\ \frac{:)}{:(} \end{bmatrix}$$

$$Ans3 = \begin{bmatrix} .1 = \left(\operatorname{Cos}(\alpha) = \frac{2\sqrt{6}}{5}\right) & .2 = \left(\operatorname{Sin}(\beta) = -\frac{\sqrt{35}}{6}\right) \\ .3 = \left(\operatorname{Tan}(\alpha) = \frac{\sqrt{6}}{12}\right) & .4 = \left(\operatorname{Sin}(\beta - \alpha) = -\frac{\sqrt{6}\sqrt{35}}{15} + \frac{1}{30}\right) \\ .5 = \left(\operatorname{Cos}(\alpha - \beta) = -\frac{\sqrt{6}}{15} - \frac{\sqrt{35}}{30}\right) & .6 = \left(\operatorname{Tan}(\alpha + \beta) = -\frac{72\sqrt{6}}{11} - \frac{25\sqrt{35}}{11}\right) \\ .7 = \left(\operatorname{Sin}(2\beta) = \frac{\sqrt{35}}{18}\right) & .8 = \left(\operatorname{Tan}(2\alpha) = \frac{4\sqrt{6}}{23}\right) \end{bmatrix}, \quad Ans4 = \begin{bmatrix} .1 = \left(\operatorname{Sin}(\alpha) = \frac{-3}{5}\right) & .2 = \left(\operatorname{Cos}(\beta) = -\frac{\sqrt{11}}{6}\right) \\ .3 = \left(\operatorname{Tan}(\alpha) = \frac{-3}{4}\right) & .4 = \left(\operatorname{Sin}(\beta - \alpha) = \frac{2}{3} - \frac{\sqrt{11}}{10}\right) \\ .5 = \left(\operatorname{Cos}(\alpha + \beta) = -\frac{2\sqrt{11}}{15} + \frac{1}{2}\right) & .6 = \left(\operatorname{Tan}(\alpha - \beta) = \frac{432}{49} - \frac{125\sqrt{11}}{49}\right) \\ .7 = \left(\operatorname{Cos}(2\alpha) = \frac{7}{25}\right) & .8 = \left(\operatorname{Tan}(2\beta) = \frac{5\sqrt{11}}{7}\right) \end{bmatrix}, \begin{bmatrix} \frac{:)}{:(} \\ M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \\ \frac{:)}{:(} \end{bmatrix}$$

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

$$Ans6 = (\operatorname{Cos}(6^o) = (\operatorname{Sqrt}(0.9890) = 0.995)), \quad , \begin{bmatrix} M \\ U \\ T \end{bmatrix}$$

$$Ans1 = \begin{bmatrix} .1 = \left(\operatorname{Cos}\left(\frac{5\pi}{12}\right) = \frac{\sqrt{2}\sqrt{3}}{4} - \frac{\sqrt{2}}{4}\right) & .2 = \left(\operatorname{Sin}(105^o) = \frac{\sqrt{2}}{4} + \frac{\sqrt{2}\sqrt{3}}{4}\right) \\ .3 = \left(\operatorname{Tan}\left(\frac{\pi}{12}\right) = 2 - \sqrt{3}\right) & .4 = \left(\operatorname{Tan}\left(-\frac{13\pi}{12}\right) = -2 + \sqrt{3}\right) \\ .5 = (\operatorname{Sec}(195^o) = -\sqrt{2}\sqrt{3} + \sqrt{2}) & .6 = \left(\operatorname{Sin}((\text{-}165)^o) = \frac{\sqrt{2}}{4} - \frac{\sqrt{2}\sqrt{3}}{4}\right) \\ .7 = \left(\operatorname{Csc}\left(-\frac{5\pi}{12}\right) = -\sqrt{2}\sqrt{3} + \sqrt{2}\right) & .8 = \left(\operatorname{Cos}\left(\frac{23\pi}{12}\right) = \frac{\sqrt{2}}{4} + \frac{\sqrt{2}\sqrt{3}}{4}\right) \end{bmatrix}, \begin{bmatrix} :) \\ :(\\ M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \\ :) \\ :(\end{bmatrix}$$

$$Ans2 = \begin{bmatrix} .1 = \left(2\operatorname{Cos}\left(\frac{\pi}{12}\right)^2 - 1 = \left(\operatorname{Cos}\left(\frac{\pi}{6}\right) = \frac{\sqrt{3}}{2}\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}(22.5^o)\operatorname{Cos}(22.5^o) = \left(\operatorname{Sin}(45^o) = \frac{\sqrt{2}}{2}\right)\right) & .4 = \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) \\ .5 = \left(\operatorname{Cos}\left(\frac{11\pi}{60}\right)\operatorname{Cos}\left(\frac{\pi}{15}\right) - \operatorname{Sin}\left(\frac{11\pi}{60}\right)\operatorname{Sin}\left(\frac{\pi}{15}\right) = \left(\operatorname{Cos}\left(\frac{\pi}{4}\right) = \frac{\sqrt{2}}{2}\right)\right) & .6 = \left(\operatorname{Sin}(25^o)\operatorname{Cos}(35^o) + \operatorname{Cos}(25^o)\operatorname{Sin}(35^o) = \left(\operatorname{Sin}(60^o) = \frac{\sqrt{3}}{2}\right)\right) \\ .7 = \left(\operatorname{Sin}\left(\frac{7\pi}{36}\right)\operatorname{Cos}\left(\frac{\pi}{36}\right) - \operatorname{Cos}\left(\frac{7\pi}{36}\right)\operatorname{Sin}\left(\frac{\pi}{36}\right) = \left(\operatorname{Sin}\left(\frac{\pi}{6}\right) = \frac{1}{2}\right)\right) & .8 = \left(\frac{\operatorname{Tan}\left(\frac{19\pi}{60}\right) - \operatorname{Tan}\left(\frac{\pi}{15}\right)}{1 + \operatorname{Tan}\left(\frac{19\pi}{60}\right)\operatorname{Tan}\left(\frac{\pi}{15}\right)} = \left(\operatorname{Tan}\left(\frac{\pi}{4}\right) = 1\right)\right) \\ .9 = \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) & .10 = \left(\frac{2\operatorname{Tan}(15^o)}{1 - \operatorname{Tan}(15^o)^2} = \left(\operatorname{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}$$

$$Ans3 = \begin{bmatrix} .1 = \left(\operatorname{Cos}(\alpha) = \frac{\sqrt{3}}{2}\right) & .2 = \left(\operatorname{Sin}(\beta) = \frac{\sqrt{15}}{4}\right) \\ .3 = (\operatorname{Tan}(\beta) = -\sqrt{15}) & .4 = \left(\operatorname{Sin}(\alpha + \beta) = -\frac{1}{8} + \frac{\sqrt{3}\sqrt{15}}{8}\right) \\ .5 = \left(\operatorname{Cos}(\alpha - \beta) = -\frac{\sqrt{3}}{8} + \frac{\sqrt{15}}{8}\right) & .6 = \left(\operatorname{Tan}(\beta - \alpha) = \frac{\sqrt{5}\sqrt{3}}{3} + \frac{4\sqrt{3}}{3}\right) \\ .7 = \left(\operatorname{Sin}(2\alpha) = \frac{\sqrt{3}}{2}\right) & .8 = \left(\operatorname{Tan}(2\beta) = \frac{\sqrt{15}}{7}\right) \end{bmatrix}, \; Ans4 = \begin{bmatrix} .1 = \left(\operatorname{Sin}(\alpha) = -\frac{\sqrt{11}}{6}\right) & .2 = \left(\operatorname{Cos}(\beta) = -\frac{\sqrt{35}}{6}\right) \\ .3 = \left(\operatorname{Tan}(\alpha) = -\frac{\sqrt{11}}{5}\right) & .4 = \left(\operatorname{Sin}(\beta - \alpha) = -\frac{5}{36} - \frac{\sqrt{11}\sqrt{35}}{36}\right) \\ .5 = \left(\operatorname{Cos}(\alpha + \beta) = -\frac{5\sqrt{35}}{36} - \frac{\sqrt{11}}{36}\right) & .6 = \left(\operatorname{Tan}(\alpha - \beta) = -\frac{5\sqrt{11}}{24} - \frac{\sqrt{35}}{24}\right) \\ .7 = \left(\operatorname{Cos}(2\beta) = \frac{17}{18}\right) & .8 = \left(\operatorname{Tan}(2\alpha) = -\frac{5\sqrt{11}}{7}\right) \end{bmatrix}, \begin{bmatrix} :) \\ :(\\ M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \\ :) \\ :(\end{bmatrix}$$

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

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

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

$$Ans2 = \begin{bmatrix} .1 = \left(2\,\mathrm{Sin}(15^{o})\,\mathrm{Cos}(15^{o}) = \left(\mathrm{Sin}(30^{o}) = \frac{1}{2}\right)\right) & .2 = \left(1 - 2\,\mathrm{Sin}\left(\frac{\pi}{12}\right)^2 = \left(\mathrm{Cos}\left(\frac{\pi}{6}\right) = \frac{\sqrt{3}}{2}\right)\right) \\ .3 = \left(\mathrm{Cos}(22.5^{o})^2 - \mathrm{Sin}(22.5^{o})^2 = \left(\mathrm{Cos}(45^{o}) = \frac{\sqrt{2}}{2}\right)\right) & .4 = \left(2\,\mathrm{Cos}\left(\frac{\pi}{8}\right)^2 - 1 = \left(\mathrm{Cos}\left(\frac{\pi}{4}\right) = \frac{\sqrt{2}}{2}\right)\right) \\ .5 = \left(\mathrm{Cos}\left(\frac{\pi}{9}\right)\mathrm{Cos}\left(\frac{5\pi}{36}\right) - \mathrm{Sin}\left(\frac{\pi}{9}\right)\mathrm{Sin}\left(\frac{5\pi}{36}\right) = \left(\mathrm{Cos}\left(\frac{\pi}{4}\right) = \frac{\sqrt{2}}{2}\right)\right) & .6 = \left(\frac{\mathrm{Tan}(48^{o}) + \mathrm{Tan}(12^{o})}{1 - \mathrm{Tan}(48^{o})\,\mathrm{Tan}(12^{o})} = (\mathrm{Tan}(60^{o}) = \sqrt{3})\right) \\ .7 = \left(\mathrm{Cos}\left(\frac{17\pi}{30}\right)\mathrm{Cos}\left(\frac{\pi}{15}\right) + \mathrm{Sin}\left(\frac{17\pi}{30}\right)\mathrm{Sin}\left(\frac{\pi}{15}\right) = \left(\mathrm{Cos}\left(\frac{\pi}{2}\right) = 0\right)\right) & .8 = \left(\frac{2\,\mathrm{Tan}\left(\frac{\pi}{12}\right)}{1 - \mathrm{Tan}\left(\frac{\pi}{12}\right)^2} = \left(\mathrm{Tan}\left(\frac{\pi}{6}\right) = \mathrm{Tan}\left(\frac{\pi}{6}\right)\right)\right) \\ .9 = \left(\frac{\mathrm{Tan}(60^{o}) - \mathrm{Tan}(15^{o})}{1 + \mathrm{Tan}(60^{o})\,\mathrm{Tan}(15^{o})} = (\mathrm{Tan}(45^{o}) = 1)\right) & .10 = \left(\mathrm{Sin}(18^{o})\,\mathrm{Cos}(12^{o}) + \mathrm{Cos}(18^{o})\,\mathrm{Sin}(12^{o}) = \left(\mathrm{Sin}(30^{o}) = \frac{1}{2}\right)\right) \end{bmatrix}, \begin{bmatrix} :) \\ :(\\ :) \\ :(\\ \begin{bmatrix}\begin{bmatrix} M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \end{bmatrix}\end{bmatrix} \\ :) \\ :(\\ :) \\ :(\\ :) \\ :(\end{bmatrix}$$

$$Ans3 = \begin{bmatrix} .1 = \left(\mathrm{Cos}(\alpha) = \frac{3}{5}\right) & .2 = \left(\mathrm{Sin}(\beta) = -\frac{\sqrt{65}}{9}\right) \\ .3 = \left(\mathrm{Tan}(\alpha) = \frac{4}{3}\right) & .4 = \left(\mathrm{Sin}(\alpha - \beta) = -\frac{16}{45} + \frac{\sqrt{65}}{15}\right) \\ .5 = \left(\mathrm{Cos}(\alpha + \beta) = -\frac{4}{15} + \frac{4\sqrt{65}}{45}\right) & .6 = \left(\mathrm{Tan}(\beta - \alpha) = -\frac{25\sqrt{65}}{224} + \frac{243}{224}\right) \\ .7 = \left(\mathrm{Sin}(2\beta) = \frac{8\sqrt{65}}{81}\right) & .8 = \left(\mathrm{Tan}(2\alpha) = \frac{-24}{7}\right) \end{bmatrix}, \quad Ans4 = \begin{bmatrix} .1 = \left(\mathrm{Cos}(\alpha) = \frac{\sqrt{3}}{2}\right) & .2 = \left(\mathrm{Sin}(\beta) = \frac{\sqrt{21}}{5}\right) \\ .3 = \left(\mathrm{Tan}(\beta) = -\frac{\sqrt{21}}{2}\right) & .4 = \left(\mathrm{Sin}(\beta - \alpha) = \frac{\sqrt{21}\sqrt{3}}{10} - \frac{1}{5}\right) \\ .5 = \left(\mathrm{Cos}(\alpha - \beta) = -\frac{\sqrt{3}}{5} - \frac{\sqrt{21}}{10}\right) & .6 = \left(\mathrm{Tan}(\alpha + \beta) = \frac{8\sqrt{7}\sqrt{3}}{9} + \frac{25\sqrt{3}}{9}\right) \\ .7 = \left(\mathrm{Cos}(2\alpha) = \frac{1}{2}\right) & .8 = \left(\mathrm{Tan}(2\beta) = \frac{4\sqrt{21}}{17}\right) \end{bmatrix}, \begin{bmatrix} :) \\ :(\\ M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \\ :) \\ :(\end{bmatrix}$$

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

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

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$$Ans1 = \begin{bmatrix} .1 = \left(\mathrm{Sin}\left(\frac{\pi}{12}\right) = \frac{\sqrt{2}\sqrt{3}}{4} - \frac{\sqrt{2}}{4}\right) & .2 = \left(\mathrm{Cos}(105^o) = \frac{\sqrt{2}}{4} - \frac{\sqrt{2}\sqrt{3}}{4}\right) \\ .3 = \left(\mathrm{Tan}\left(\frac{5\pi}{12}\right) = 2 + \sqrt{3}\right) & .4 = (\mathrm{Csc}(345^o) = -\sqrt{2}\sqrt{3} - \sqrt{2}) \\ .5 = \left(\mathrm{Cos}\left(-\frac{13\pi}{12}\right) = -\frac{\sqrt{2}}{4} - \frac{\sqrt{2}\sqrt{3}}{4}\right) & .6 = \left(\mathrm{Sin}((\text{-}105)^o) = -\frac{\sqrt{2}}{4} - \frac{\sqrt{2}\sqrt{3}}{4}\right) \\ .7 = \left(\mathrm{Cot}\left(-\frac{23\pi}{12}\right) = 2 + \sqrt{3}\right) & .8 = (\mathrm{Tan}((\text{-}165)^o) = 2 - \sqrt{3}) \end{bmatrix}, \ , \begin{bmatrix} :) \\ :(\\ M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \\ :) \\ :(\end{bmatrix}$$

$$Ans2 = \begin{bmatrix} .1 = \left(\mathrm{Sin}(70^o)\mathrm{Cos}(10^o) - \mathrm{Cos}(70^o)\mathrm{Sin}(10^o) = \left(\mathrm{Sin}(60^o) = \frac{\sqrt{3}}{2}\right)\right) & .2 = \left(\mathrm{Cos}(22.5^o)^2 - \mathrm{Sin}(22.5^o)^2 = \left(\mathrm{Cos}(45^o) = \frac{\sqrt{2}}{2}\right)\right) \\ .3 = \left(\mathrm{Cos}(12^o)\mathrm{Cos}(33^o) - \mathrm{Sin}(12^o)\mathrm{Sin}(33^o) = \left(\mathrm{Cos}(45^o) = \frac{\sqrt{2}}{2}\right)\right) & .4 = \left(\frac{2\,\mathrm{Tan}(15^o)}{1 - \mathrm{Tan}(15^o)^2} = \left(\mathrm{Tan}(30^o) = \frac{\sqrt{3}}{3}\right)\right) \\ .5 = \left(\frac{\mathrm{Tan}(60^o) - \mathrm{Tan}(15^o)}{1 + \mathrm{Tan}(60^o)\mathrm{Tan}(15^o)} = (\mathrm{Tan}(45^o) = 1)\right) & .6 = \left(\mathrm{Cos}\left(\frac{7\pi}{36}\right)\mathrm{Cos}\left(\frac{\pi}{36}\right) + \mathrm{Sin}\left(\frac{7\pi}{36}\right)\mathrm{Sin}\left(\frac{\pi}{36}\right) = \left(\mathrm{Cos}\left(\frac{\pi}{6}\right) = \frac{\sqrt{3}}{2}\right)\right) \\ .7 = \left(\frac{\mathrm{Tan}\left(\frac{4\pi}{15}\right) + \mathrm{Tan}\left(\frac{\pi}{15}\right)}{1 - \mathrm{Tan}\left(\frac{4\pi}{15}\right)\mathrm{Tan}\left(\frac{\pi}{15}\right)} = \left(\mathrm{Tan}\left(\frac{\pi}{3}\right) = \sqrt{3}\right)\right) & .8 = \left(2\,\mathrm{Sin}\left(\frac{\pi}{12}\right)\mathrm{Cos}\left(\frac{\pi}{12}\right) = \left(\mathrm{Sin}\left(\frac{\pi}{6}\right) = \frac{1}{2}\right)\right) \\ .9 = \left(1 - 2\,\mathrm{Sin}\left(\frac{\pi}{8}\right)^2 = \left(\mathrm{Cos}\left(\frac{\pi}{4}\right) = \frac{\sqrt{2}}{2}\right)\right) & .10 = \left(2\,\mathrm{Cos}(15^o)^2 - 1 = \left(\mathrm{Cos}(30^o) = \frac{\sqrt{3}}{2}\right)\right) \end{bmatrix}, \ , \begin{bmatrix} :) \\ :(\\ :) \\ :(\\ \left[\left[\begin{bmatrix} M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \end{bmatrix}\right]\right] \\ :) \\ :(\\ :) \\ :(\\ :) \\ :(\end{bmatrix}$$

$$Ans3 = \begin{bmatrix} .1 = \left(\mathrm{Cos}(\alpha) = \frac{2\sqrt{2}}{3}\right) & .2 = \left(\mathrm{Sin}(\beta) = -\frac{2\sqrt{10}}{7}\right) \\ .3 = \left(\mathrm{Tan}(\beta) = \frac{2\sqrt{10}}{3}\right) & .4 = \left(\mathrm{Sin}(\beta - \alpha) = -\frac{4\sqrt{2}\sqrt{10}}{21} + \frac{1}{7}\right) \\ .5 = \left(\mathrm{Cos}(\alpha - \beta) = -\frac{2\sqrt{2}}{7} - \frac{2\sqrt{10}}{21}\right) & .6 = \left(\mathrm{Tan}(\alpha + \beta) = \frac{49\sqrt{2}}{16} + \frac{27\sqrt{2}\sqrt{5}}{16}\right) \\ .7 = \left(\mathrm{Cos}(2\beta) = \frac{\text{-}31}{49}\right) & .8 = \left(\mathrm{Tan}(2\alpha) = \frac{4\sqrt{2}}{7}\right) \end{bmatrix}, \ , Ans4 = \begin{bmatrix} .1 = \left(\mathrm{Sin}(\alpha) = \frac{\text{-}3}{5}\right) & .2 = \left(\mathrm{Cos}(\beta) = -\frac{\sqrt{3}}{2}\right) \\ .3 = \left(\mathrm{Tan}(\alpha) = \frac{\text{-}3}{4}\right) & .4 = \left(\mathrm{Sin}(\alpha + \beta) = \frac{3\sqrt{3}}{10} + \frac{2}{5}\right) \\ .5 = \left(\mathrm{Cos}(\beta - \alpha) = -\frac{2\sqrt{3}}{5} - \frac{3}{10}\right) & .6 = \left(\mathrm{Tan}(\alpha - \beta) = \frac{25\sqrt{3}}{39} - \frac{16}{13}\right) \\ .7 = \left(\mathrm{Cos}(2\alpha) = \frac{7}{25}\right) & .8 = (\mathrm{Tan}(2\beta) = -\sqrt{3}) \end{bmatrix}, \ , \begin{bmatrix} :) \\ :(\\ M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \\ :) \\ :(\end{bmatrix}$$

$$Ans5 = (\mathrm{Sin}(9^o) = (\mathrm{Sqrt}(0.0245) = 0.156)), \ , \begin{bmatrix} M \\ U \\ T \end{bmatrix}$$

$$Ans6 = (\mathrm{Cos}(25^o) = (\mathrm{Sqrt}(0.8215) = 0.906)), \ , \begin{bmatrix} M \\ U \\ T \end{bmatrix}$$

$$Ans1 = \begin{bmatrix} .1 = \left(\mathrm{Cos}\left(\frac{5\pi}{12}\right) = \frac{\sqrt{2}\sqrt{3}}{4} - \frac{\sqrt{2}}{4}\right) & .2 = \left(\mathrm{Sin}(105^o) = \frac{\sqrt{2}}{4} + \frac{\sqrt{2}\sqrt{3}}{4}\right) \\ .3 = (\mathrm{Tan}(15^o) = 2 - \sqrt{3}) & .4 = \left(\mathrm{Tan}\left(\frac{13\pi}{12}\right) = 2 - \sqrt{3}\right) \\ .5 = \left(\mathrm{Cos}((-165)^o) = -\frac{\sqrt{2}}{4} - \frac{\sqrt{2}\sqrt{3}}{4}\right) & .6 = \left(\mathrm{Cot}\left(-\frac{19\pi}{12}\right) = 2 - \sqrt{3}\right) \\ .7 = (\mathrm{Csc}(165^o) = \sqrt{2}\sqrt{3} + \sqrt{2}) & .8 = (\mathrm{Sec}((-345)^o) = \sqrt{2}\sqrt{3} - \sqrt{2}) \end{bmatrix}, \begin{bmatrix} :) \\ :(\\ M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \\ :) \\ :(\end{bmatrix}$$

$$Ans2 = \begin{bmatrix} .1 = \left(\mathrm{Cos}\left(\frac{\pi}{8}\right)^2 - \mathrm{Sin}\left(\frac{\pi}{8}\right)^2 = \left(\mathrm{Cos}\left(\frac{\pi}{4}\right) = \frac{\sqrt{2}}{2}\right)\right) & .2 = \left(\frac{\mathrm{Tan}(42^o) - \mathrm{Tan}(12^o)}{1 + \mathrm{Tan}(42^o)\,\mathrm{Tan}(12^o)} = \left(\mathrm{Tan}(30^o) = \frac{\sqrt{3}}{3}\right)\right) \\ .3 = \left(\frac{\mathrm{Tan}\left(\frac{\pi}{15}\right) + \mathrm{Tan}\left(\frac{\pi}{10}\right)}{1 - \mathrm{Tan}\left(\frac{\pi}{15}\right)\mathrm{Tan}\left(\frac{\pi}{10}\right)} = \left(\mathrm{Tan}\left(\frac{\pi}{6}\right) = \frac{\sqrt{3}}{3}\right)\right) & .4 = \left(2\,\mathrm{Sin}(22.5^o)\,\mathrm{Cos}(22.5^o) = \left(\mathrm{Sin}(45^o) = \frac{\sqrt{2}}{2}\right)\right) \\ .5 = \left(1 - 2\,\mathrm{Sin}\left(\frac{\pi}{12}\right)^2 = \left(\mathrm{Cos}\left(\frac{\pi}{6}\right) = \frac{\sqrt{3}}{2}\right)\right) & .6 = \left(2\,\mathrm{Cos}(15^o)^2 - 1 = \left(\mathrm{Cos}(30^o) = \frac{\sqrt{3}}{2}\right)\right) \\ .7 = \left(\mathrm{Sin}(50^o)\,\mathrm{Cos}(10^o) + \mathrm{Cos}(50^o)\,\mathrm{Sin}(10^o) = \left(\mathrm{Sin}(60^o) = \frac{\sqrt{3}}{2}\right)\right) & .8 = \left(\mathrm{Cos}\left(\frac{\pi}{18}\right)\mathrm{Cos}\left(\frac{4\pi}{9}\right) - \mathrm{Sin}\left(\frac{\pi}{18}\right)\mathrm{Sin}\left(\frac{4\pi}{9}\right) = \left(\mathrm{Cos}\left(\frac{\pi}{2}\right) = 0\right)\right) \\ .9 = \left(\mathrm{Sin}(85^o)\,\mathrm{Cos}(25^o) - \mathrm{Cos}(85^o)\,\mathrm{Sin}(25^o) = \left(\mathrm{Sin}(60^o) = \frac{\sqrt{3}}{2}\right)\right) & .10 = \left(\frac{2\,\mathrm{Tan}\left(\frac{\pi}{12}\right)}{1 - \mathrm{Tan}\left(\frac{\pi}{12}\right)^2} = \left(\mathrm{Tan}\left(\frac{\pi}{6}\right) = \mathrm{Tan}\left(\frac{\pi}{6}\right)\right)\right) \end{bmatrix}, \begin{bmatrix} :) \\ :(\\ :) \\ :(\\ \left[\left[\begin{matrix} M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \end{matrix}\right]\right] \\ :) \\ :(\\ :) \\ :(\\ :) \\ :(\end{bmatrix}$$

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

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

$$Ans6 = (\mathrm{Cos}(11^o) = (\mathrm{Sqrt}(0.9635) = 0.982)), \quad \begin{bmatrix} M \\ U \\ T \end{bmatrix}$$

$$Ans1 = \begin{bmatrix} .1 = \left(\mathrm{Sin}\left(\frac{\pi}{12}\right) = \frac{\sqrt{2}\sqrt{3}}{4} - \frac{\sqrt{2}}{4}\right) & .2 = \left(\mathrm{Cos}(105^{o}) = \frac{\sqrt{2}}{4} - \frac{\sqrt{2}\sqrt{3}}{4}\right) \\ .3 = \left(\mathrm{Tan}\left(\frac{5\pi}{12}\right) = 2 + \sqrt{3}\right) & .4 = (\mathrm{Sec}(165^{o}) = -\sqrt{2}\sqrt{3} + \sqrt{2}) \\ .5 = \left(\mathrm{Cot}\left(-\frac{13\pi}{12}\right) = -2 - \sqrt{3}\right) & .6 = \left(\mathrm{Cos}\left(-\frac{11\pi}{12}\right) = -\frac{\sqrt{2}}{4} - \frac{\sqrt{2}\sqrt{3}}{4}\right) \\ .7 = (\mathrm{Tan}(195^{o}) = 2 - \sqrt{3}) & .8 = (\mathrm{Csc}(345^{o}) = -\sqrt{2}\sqrt{3} - \sqrt{2}) \end{bmatrix}, \quad , \begin{bmatrix} :) \\ :(\\ M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \\ :) \\ :(\end{bmatrix}$$

$$Ans2 = \begin{bmatrix} .1 = \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) & .2 = \left(\mathrm{Sin}\left(\frac{17\pi}{36}\right)\mathrm{Cos}\left(\frac{5\pi}{36}\right) - \mathrm{Cos}\left(\frac{17\pi}{36}\right)\mathrm{Sin}\left(\frac{5\pi}{36}\right) = \left(\mathrm{Sin}\left(\frac{\pi}{3}\right) = \frac{\sqrt{3}}{2}\right)\right) \\ .3 = \left(\mathrm{Cos}\left(\frac{5\pi}{36}\right)\mathrm{Cos}\left(\frac{\pi}{36}\right) - \mathrm{Sin}\left(\frac{5\pi}{36}\right)\mathrm{Sin}\left(\frac{\pi}{36}\right) = \left(\mathrm{Cos}\left(\frac{\pi}{6}\right) = \frac{\sqrt{3}}{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(2\,\mathrm{Cos}(15^{o})^{2} - 1 = \left(\mathrm{Cos}(30^{o}) = \frac{\sqrt{3}}{2}\right)\right) & .6 = \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) \\ .7 = \left(\mathrm{Sin}(33^{o})\,\mathrm{Cos}(12^{o}) + \mathrm{Cos}(33^{o})\,\mathrm{Sin}(12^{o}) = \left(\mathrm{Sin}(45^{o}) = \frac{\sqrt{2}}{2}\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(\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(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}, \quad , \begin{bmatrix} :) \\ :(\\ :) \\ :(\\ \left[\left[\begin{matrix} M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \end{matrix}\right]\right] \\ :) \\ :(\\ :) \\ :(\\ :) \\ :(\end{bmatrix}$$

$$Ans3 = \begin{bmatrix} .1 = \left(\mathrm{Cos}(\alpha) = \frac{3\sqrt{5}}{7}\right) & .2 = \left(\mathrm{Sin}(\beta) = \frac{-3}{5}\right) \\ .3 = \left(\mathrm{Tan}(\beta) = \frac{3}{4}\right) & .4 = \left(\mathrm{Sin}(\alpha - \beta) = -\frac{8}{35} + \frac{9\sqrt{5}}{35}\right) \\ .5 = \left(\mathrm{Cos}(\alpha + \beta) = -\frac{12\sqrt{5}}{35} + \frac{6}{35}\right) & .6 = \left(\mathrm{Tan}(\beta - \alpha) = \frac{49}{57} - \frac{25\sqrt{5}}{114}\right) \\ .7 = \left(\mathrm{Cos}(2\beta) = \frac{7}{25}\right) & .8 = \left(\mathrm{Tan}(2\alpha) = \frac{12\sqrt{5}}{41}\right) \end{bmatrix}, \quad , \quad Ans4 = \begin{bmatrix} .1 = \left(\mathrm{Sin}(\alpha) = -\frac{\sqrt{5}}{3}\right) & .2 = \left(\mathrm{Cos}(\beta) = -\frac{\sqrt{11}}{6}\right) \\ .3 = \left(\mathrm{Tan}(\alpha) = -\frac{\sqrt{5}}{2}\right) & .4 = \left(\mathrm{Sin}(\alpha - \beta) = \frac{\sqrt{5}\sqrt{11}}{18} - \frac{5}{9}\right) \\ .5 = \left(\mathrm{Cos}(\alpha + \beta) = -\frac{\sqrt{11}}{9} + \frac{5\sqrt{5}}{18}\right) & .6 = \left(\mathrm{Tan}(\beta - \alpha) = \frac{5\sqrt{11}}{9} - \frac{8\sqrt{5}}{9}\right) \\ .7 = \left(\mathrm{Cos}(2\beta) = \frac{-7}{18}\right) & .8 = (\mathrm{Tan}(2\alpha) = 4\sqrt{5}) \end{bmatrix}, \quad , \begin{bmatrix} :) \\ :(\\ M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \\ :) \\ :(\end{bmatrix}$$

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

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

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$$Ans1 = \begin{bmatrix} .1 = \left(\text{Sin}(75^o) = \frac{\sqrt{2}}{4} + \frac{\sqrt{2}\sqrt{3}}{4}\right) & .2 = \left(\text{Cos}\left(\frac{\pi}{12}\right) = \frac{\sqrt{2}}{4} + \frac{\sqrt{2}\sqrt{3}}{4}\right) \\ .3 = \left(\text{Tan}\left(\frac{7\pi}{12}\right) = -2 - \sqrt{3}\right) & .4 = \left(\text{Tan}\left(\frac{11\pi}{12}\right) = -2 + \sqrt{3}\right) \\ .5 = \left(\text{Sin}((-15)^o) = \frac{\sqrt{2}}{4} - \frac{\sqrt{2}\sqrt{3}}{4}\right) & .6 = (\text{Csc}((-345)^o) = \sqrt{2}\sqrt{3} + \sqrt{2}) \\ .7 = \left(\text{Cos}\left(-\frac{13\pi}{12}\right) = -\frac{\sqrt{2}}{4} - \frac{\sqrt{2}\sqrt{3}}{4}\right) & .8 = (\text{Sec}(345^o) = \sqrt{2}\sqrt{3} - \sqrt{2}) \end{bmatrix}, \begin{bmatrix} :) \\ :(\\ M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \\ :) \\ :(\end{bmatrix}$$

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

$$Ans3 = \begin{bmatrix} .1 = \left(\text{Cos}(\alpha) = \frac{\sqrt{5}}{3}\right) & .2 = \left(\text{Sin}(\beta) = \frac{\sqrt{21}}{5}\right) \\ .3 = \left(\text{Tan}(\beta) = -\frac{\sqrt{21}}{2}\right) & .4 = \left(\text{Sin}(\beta - \alpha) = \frac{\sqrt{5}\sqrt{21}}{15} + \frac{4}{15}\right) \\ .5 = \left(\text{Cos}(\alpha - \beta) = -\frac{2\sqrt{5}}{15} + \frac{2\sqrt{21}}{15}\right) & .6 = \left(\text{Tan}(\alpha + \beta) = -\frac{25\sqrt{5}}{32} + \frac{9\sqrt{21}}{32}\right) \\ .7 = \left(\text{Cos}(2\alpha) = \frac{1}{9}\right) & .8 = \left(\text{Tan}(2\beta) = \frac{4\sqrt{21}}{17}\right) \end{bmatrix}, \; Ans4 = \begin{bmatrix} .1 = \left(\text{Cos}(\alpha) = -\frac{3\sqrt{5}}{7}\right) & .2 = \left(\text{Sin}(\beta) = -\frac{\sqrt{11}}{6}\right) \\ .3 = \left(\text{Tan}(\beta) = -\frac{\sqrt{11}}{5}\right) & .4 = \left(\text{Sin}(\alpha + \beta) = -\frac{5}{21} + \frac{\sqrt{5}\sqrt{11}}{14}\right) \\ .5 = \left(\text{Cos}(\alpha - \beta) = -\frac{5\sqrt{5}}{14} + \frac{\sqrt{11}}{21}\right) & .6 = \left(\text{Tan}(\beta - \alpha) = -\frac{245\sqrt{11}}{1081} - \frac{216\sqrt{5}}{1081}\right) \\ .7 = \left(\text{Sin}(2\beta) = -\frac{5\sqrt{11}}{18}\right) & .8 = \left(\text{Tan}(2\alpha) = \frac{12\sqrt{5}}{41}\right) \end{bmatrix}, \begin{bmatrix} :) \\ :(\\ M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \\ :) \\ :(\end{bmatrix}$$

$$Ans5 = (\text{Sin}(28^o) = (\text{Sqrt}(0.2205) = 0.469)), \begin{bmatrix} M \\ U \\ T \end{bmatrix}$$

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

$$Ans1 = \begin{bmatrix} .1 = \left(\mathrm{Cos}(105^{o}) = \frac{\sqrt{2}}{4} - \frac{\sqrt{2}\sqrt{3}}{4}\right) & .2 = \left(\mathrm{Sin}\left(\frac{\pi}{12}\right) = \frac{\sqrt{2}\sqrt{3}}{4} - \frac{\sqrt{2}}{4}\right) \\ .3 = (\mathrm{Tan}(75^{o}) = 2 + \sqrt{3}) & .4 = (\mathrm{Cot}((-345)^{o}) = 2 + \sqrt{3}) \\ .5 = \left(\mathrm{Csc}\left(\frac{19\pi}{12}\right) = -\sqrt{2}\sqrt{3} + \sqrt{2}\right) & .6 = \left(\mathrm{Tan}\left(-\frac{7\pi}{12}\right) = 2 + \sqrt{3}\right) \\ .7 = (\mathrm{Sec}(255^{o}) = -\sqrt{2}\sqrt{3} - \sqrt{2}) & .8 = \left(\mathrm{Sin}\left(-\frac{17\pi}{12}\right) = \frac{\sqrt{2}}{4} + \frac{\sqrt{2}\sqrt{3}}{4}\right) \end{bmatrix}, \quad \begin{bmatrix} :) \\ :(\\ M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \\ :) \\ :(\end{bmatrix}$$

$$Ans2 = \begin{bmatrix} .1 = \left(\mathrm{Sin}\left(\frac{\pi}{18}\right)\mathrm{Cos}\left(\frac{4\pi}{9}\right) + \mathrm{Cos}\left(\frac{\pi}{18}\right)\mathrm{Sin}\left(\frac{4\pi}{9}\right) = \left(\mathrm{Sin}\left(\frac{\pi}{2}\right) = 1\right)\right) & .2 = (\mathrm{Cos}(100^{o})\,\mathrm{Cos}(10^{o}) + \mathrm{Sin}(100^{o})\,\mathrm{Sin}(10^{o}) = (\mathrm{Cos}(90^{o}) = 0)) \\ .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(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) \\ .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}(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) \\ .7 = \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) & .8 = \left(1 - 2\,\mathrm{Sin}(15^{o})^{2} = \left(\mathrm{Cos}(30^{o}) = \frac{\sqrt{3}}{2}\right)\right) \\ .9 = \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) & .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}, \quad \begin{bmatrix} :) \\ :(\\ :) \\ :(\\ \begin{bmatrix}\begin{bmatrix} M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \end{bmatrix}\end{bmatrix} \\ :) \\ :(\\ :) \\ :(\\ :) \\ :(\end{bmatrix}$$

$$Ans3 = \begin{bmatrix} .1 = \left(\mathrm{Cos}(\alpha) = \frac{\sqrt{39}}{8}\right) & .2 = \left(\mathrm{Sin}(\beta) = -\frac{\sqrt{3}}{2}\right) \\ .3 = \left(\mathrm{Tan}(\alpha) = \frac{5\sqrt{39}}{39}\right) & .4 = \left(\mathrm{Sin}(\beta - \alpha) = -\frac{\sqrt{3}\sqrt{39}}{16} - \frac{5}{16}\right) \\ .5 = \left(\mathrm{Cos}(\alpha - \beta) = \frac{\sqrt{39}}{16} - \frac{5\sqrt{3}}{16}\right) & .6 = \left(\mathrm{Tan}(\alpha + \beta) = -\frac{5\sqrt{3}\sqrt{13}}{9} + \frac{16\sqrt{3}}{9}\right) \\ .7 = \left(\mathrm{Cos}(2\alpha) = \frac{7}{32}\right) & .8 = (\mathrm{Tan}(2\beta) = \sqrt{3}) \end{bmatrix}, \quad Ans4 = \begin{bmatrix} .1 = \left(\mathrm{Sin}(\alpha) = \frac{2\sqrt{10}}{7}\right) & .2 = \left(\mathrm{Cos}(\beta) = -\frac{2\sqrt{14}}{9}\right) \\ .3 = \left(\mathrm{Tan}(\beta) = \frac{5\sqrt{14}}{28}\right) & .4 = \left(\mathrm{Sin}(\beta - \alpha) = \frac{5}{21} + \frac{4\sqrt{10}\sqrt{14}}{63}\right) \\ .5 = \left(\mathrm{Cos}(\alpha - \beta) = \frac{2\sqrt{14}}{21} - \frac{10\sqrt{10}}{63}\right) & .6 = \left(\mathrm{Tan}(\alpha + \beta) = \frac{243\sqrt{2}\sqrt{5}}{248} - \frac{245\sqrt{2}\sqrt{7}}{248}\right) \\ .7 = \left(\mathrm{Sin}(2\alpha) = -\frac{12\sqrt{10}}{49}\right) & .8 = \left(\mathrm{Tan}(2\beta) = \frac{20\sqrt{14}}{31}\right) \end{bmatrix}, \quad \begin{bmatrix} :) \\ :(\\ M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \\ :) \\ :(\end{bmatrix}$$

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

$$Ans6 = (\mathrm{Sin}(28^{o}) = (\mathrm{Sqrt}(0.2205) = 0.469)), \quad \begin{bmatrix} M \\ U \\ T \end{bmatrix}$$

$$Ans1 = \begin{bmatrix} .1 = \left(\mathrm{Cos}(75^o) = \frac{\sqrt{2}\sqrt{3}}{4} - \frac{\sqrt{2}}{4}\right) & .2 = \left(\mathrm{Sin}\left(\frac{7\pi}{12}\right) = \frac{\sqrt{2}}{4} + \frac{\sqrt{2}\sqrt{3}}{4}\right) \\ .3 = (\mathrm{Tan}(15^o) = 2 - \sqrt{3}) & .4 = (\mathrm{Csc}((-285)^o) = \sqrt{2}\sqrt{3} - \sqrt{2}) \\ .5 = \left(\mathrm{Tan}\left(\frac{19\pi}{12}\right) = -2 - \sqrt{3}\right) & .6 = \left(\mathrm{Sin}\left(-\frac{\pi}{12}\right) = \frac{\sqrt{2}}{4} - \frac{\sqrt{2}\sqrt{3}}{4}\right) \\ .7 = (\mathrm{Sec}((-75)^o) = \sqrt{2}\sqrt{3} + \sqrt{2}) & .8 = \left(\mathrm{Cot}\left(\frac{11\pi}{12}\right) = -2 - \sqrt{3}\right) \end{bmatrix}, \ , \begin{bmatrix} :) \\ :(\\ M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \\ :) \\ :(\end{bmatrix}$$

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

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

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

$$Ans6 = (\mathrm{Sin}(5^o) = (\mathrm{Sqrt}(0.0075) = 0.087)), \ , \begin{bmatrix} M \\ U \\ T \end{bmatrix}$$

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$$Ans1 = \begin{bmatrix} .1 = \left(\mathrm{Sin}\left(\frac{\pi}{12}\right) = \frac{\sqrt{2}\sqrt{3}}{4} - \frac{\sqrt{2}}{4}\right) & .2 = \left(\mathrm{Cos}(105^o) = \frac{\sqrt{2}}{4} - \frac{\sqrt{2}\sqrt{3}}{4}\right) \\ .3 = (\mathrm{Tan}(75^o) = 2 + \sqrt{3}) & .4 = (\mathrm{Sec}((-105)^o) = -\sqrt{2}\sqrt{3} - \sqrt{2}) \\ .5 = \left(\mathrm{Csc}\left(-\frac{23\pi}{12}\right) = \sqrt{2}\sqrt{3} + \sqrt{2}\right) & .6 = \left(\mathrm{Cos}(165^o) = -\frac{\sqrt{2}}{4} - \frac{\sqrt{2}\sqrt{3}}{4}\right) \\ .7 = \left(\mathrm{Tan}\left(-\frac{11\pi}{12}\right) = 2 - \sqrt{3}\right) & .8 = \left(\mathrm{Sin}\left(-\frac{5\pi}{12}\right) = -\frac{\sqrt{2}}{4} - \frac{\sqrt{2}\sqrt{3}}{4}\right) \end{bmatrix}, \quad , \begin{bmatrix} :) \\ :(\\ M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \\ :) \\ :(\end{bmatrix}$$

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

$$Ans3 = \begin{bmatrix} .1 = \left(\mathrm{Sin}(\alpha) = \frac{2\sqrt{10}}{7}\right) & .2 = \left(\mathrm{Cos}(\beta) = \frac{\sqrt{65}}{9}\right) \\ .3 = \left(\mathrm{Tan}(\alpha) = \frac{2\sqrt{10}}{3}\right) & .4 = \left(\mathrm{Sin}(\alpha - \beta) = \frac{2\sqrt{10}\sqrt{65}}{63} + \frac{4}{21}\right) \\ .5 = \left(\mathrm{Cos}(\alpha + \beta) = \frac{\sqrt{65}}{21} + \frac{8\sqrt{10}}{63}\right) & .6 = \left(\mathrm{Tan}(\beta - \alpha) = \frac{196\sqrt{5}\sqrt{13}}{55} + \frac{486\sqrt{2}\sqrt{5}}{55}\right) \\ .7 = \left(\mathrm{Cos}(2\beta) = \frac{49}{81}\right) & .8 = \left(\mathrm{Tan}(2\alpha) = -\frac{12\sqrt{10}}{31}\right) \end{bmatrix}, \quad , \; Ans4 = \begin{bmatrix} .1 = \left(\mathrm{Sin}(\alpha) = -\frac{\sqrt{3}}{2}\right) & .2 = \left(\mathrm{Cos}(\beta) = \frac{-4}{5}\right) \\ .3 = (\mathrm{Tan}(\alpha) = \sqrt{3}) & .4 = \left(\mathrm{Sin}(\alpha + \beta) = \frac{2\sqrt{3}}{5} - \frac{3}{10}\right) \\ .5 = \left(\mathrm{Cos}(\alpha - \beta) = \frac{2}{5} - \frac{3\sqrt{3}}{10}\right) & .6 = \left(\mathrm{Tan}(\beta - \alpha) = \frac{48}{11} + \frac{25\sqrt{3}}{11}\right) \\ .7 = \left(\mathrm{Sin}(2\beta) = \frac{-24}{25}\right) & .8 = (\mathrm{Tan}(2\alpha) = -\sqrt{3}) \end{bmatrix}, \quad , \begin{bmatrix} :) \\ :(\\ M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \\ :) \\ :(\end{bmatrix}$$

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

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

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