TrigonometryExercise4 Answers for No.10052

$$Ans1 = \begin{bmatrix} .1 = \left(\mathrm{Sin}\left(\frac{5\pi}{12}\right) = \frac{\sqrt{2}}{4} + \frac{\sqrt{2}\sqrt{3}}{4}\right) & .2 = \left(\mathrm{Cos}(105^o) = \frac{\sqrt{2}}{4} - \frac{\sqrt{2}\sqrt{3}}{4}\right) \\ .3 = (\mathrm{Tan}(15^o) = 2 - \sqrt{3}) & .4 = \left(\mathrm{Csc}\left(-\frac{17\pi}{12}\right) = \sqrt{2}\sqrt{3} - \sqrt{2}\right) \\ .5 = (\mathrm{Tan}((\text{-}15)^o) = -2 + \sqrt{3}) & .6 = (\mathrm{Sec}(255^o) = -\sqrt{2}\sqrt{3} - \sqrt{2}) \\ .7 = \left(\mathrm{Sin}\left(-\frac{23\pi}{12}\right) = \frac{\sqrt{2}\sqrt{3}}{4} - \frac{\sqrt{2}}{4}\right) & .8 = \left(\mathrm{Cos}\left(\frac{13\pi}{12}\right) = -\frac{\sqrt{2}}{4} - \frac{\sqrt{2}\sqrt{3}}{4}\right) \end{bmatrix}, \begin{bmatrix} :) \\ :(\\ M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \\ :) \\ :(\end{bmatrix}$$

$$Ans2 = \begin{bmatrix} .1 = (\mathrm{Cos}(78^o)\,\mathrm{Cos}(12^o) - \mathrm{Sin}(78^o)\,\mathrm{Sin}(12^o) = (\mathrm{Cos}(90^o) = 0)) & .2 = \left(\mathrm{Cos}\left(\frac{4\pi}{9}\right)\mathrm{Cos}\left(\frac{\pi}{9}\right) + \mathrm{Sin}\left(\frac{4\pi}{9}\right)\mathrm{Sin}\left(\frac{\pi}{9}\right) = \left(\mathrm{Cos}\left(\frac{\pi}{3}\right) = \frac{1}{2}\right)\right) \\ .3 = \left(2\,\mathrm{Sin}(15^o)\,\mathrm{Cos}(15^o) = \left(\mathrm{Sin}(30^o) = \frac{1}{2}\right)\right) & .4 = \left(1 - 2\,\mathrm{Sin}\left(\frac{\pi}{12}\right)^2 = \left(\mathrm{Cos}\left(\frac{\pi}{6}\right) = \frac{\sqrt{3}}{2}\right)\right) \\ .5 = \left(\frac{2\,\mathrm{Tan}\left(\frac{\pi}{12}\right)}{1 - \mathrm{Tan}\left(\frac{\pi}{12}\right)^2} = \left(\mathrm{Tan}\left(\frac{\pi}{6}\right) = \mathrm{Tan}\left(\frac{\pi}{6}\right)\right)\right) & .6 = \left(\frac{\mathrm{Tan}(12^o) + \mathrm{Tan}(18^o)}{1 - \mathrm{Tan}(12^o)\,\mathrm{Tan}(18^o)} = \left(\mathrm{Tan}(30^o) = \frac{\sqrt{3}}{3}\right)\right) \\ .7 = \left(\mathrm{Cos}\left(\frac{\pi}{8}\right)^2 - \mathrm{Sin}\left(\frac{\pi}{8}\right)^2 = \left(\mathrm{Cos}\left(\frac{\pi}{4}\right) = \frac{\sqrt{2}}{2}\right)\right) & .8 = \left(\mathrm{Sin}\left(\frac{7\pi}{12}\right)\mathrm{Cos}\left(\frac{\pi}{12}\right) - \mathrm{Cos}\left(\frac{7\pi}{12}\right)\mathrm{Sin}\left(\frac{\pi}{12}\right) = \left(\mathrm{Sin}\left(\frac{\pi}{2}\right) = 1\right)\right) \\ .9 = \left(2\,\mathrm{Cos}(22.5^o)^2 - 1 = \left(\mathrm{Cos}(45^o) = \frac{\sqrt{2}}{2}\right)\right) & .10 = \left(\frac{\mathrm{Tan}(42^o) - \mathrm{Tan}(12^o)}{1 + \mathrm{Tan}(42^o)\,\mathrm{Tan}(12^o)} = \left(\mathrm{Tan}(30^o) = \frac{\sqrt{3}}{3}\right)\right) \end{bmatrix}, \begin{bmatrix} :) \\ :(\\ :) \\ :(\\ \begin{bmatrix}\begin{bmatrix} M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \end{bmatrix}\end{bmatrix} \\ :) \\ :(\\ :) \\ :(\\ :) \\ :(\end{bmatrix}$$

$$Ans3 = \begin{bmatrix} .1 = \left(\mathrm{Sin}(\alpha) = \frac{2\sqrt{14}}{9}\right) & .2 = \left(\mathrm{Cos}(\beta) = \frac{\sqrt{5}}{3}\right) \\ .3 = \left(\mathrm{Tan}(\alpha) = \frac{2\sqrt{14}}{5}\right) & .4 = \left(\mathrm{Sin}(\alpha+\beta) = \frac{2\sqrt{14}\sqrt{5}}{27} - \frac{10}{27}\right) \\ .5 = \left(\mathrm{Cos}(\beta-\alpha) = \frac{5\sqrt{5}}{27} - \frac{4\sqrt{14}}{27}\right) & .6 = \left(\mathrm{Tan}(\alpha-\beta) = -\frac{10\sqrt{14}}{11} - \frac{18\sqrt{5}}{11}\right) \\ .7 = \left(\mathrm{Cos}(2\beta) = \frac{1}{9}\right) & .8 = \left(\mathrm{Tan}(2\alpha) = -\frac{20\sqrt{14}}{31}\right) \end{bmatrix}, \quad Ans4 = \begin{bmatrix} .1 = \left(\mathrm{Cos}(\alpha) = -\frac{\sqrt{35}}{6}\right) & .2 = \left(\mathrm{Sin}(\beta) = -\frac{\sqrt{15}}{4}\right) \\ .3 = \left(\mathrm{Tan}(\alpha) = -\frac{\sqrt{35}}{35}\right) & .4 = \left(\mathrm{Sin}(\alpha-\beta) = -\frac{1}{24} - \frac{\sqrt{35}\sqrt{15}}{24}\right) \\ .5 = \left(\mathrm{Cos}(\alpha+\beta) = \frac{\sqrt{35}}{24} + \frac{\sqrt{15}}{24}\right) & .6 = \left(\mathrm{Tan}(\beta-\alpha) = \frac{9\sqrt{5}\sqrt{3}}{5} + \frac{4\sqrt{5}\sqrt{7}}{5}\right) \\ .7 = \left(\mathrm{Cos}(2\beta) = \frac{\text{-}7}{8}\right) & .8 = \left(\mathrm{Tan}(2\alpha) = -\frac{\sqrt{35}}{17}\right) \end{bmatrix}, \begin{bmatrix} :) \\ :(\\ M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \\ :) \\ :(\end{bmatrix}$$

$$Ans5 = (\mathrm{Sin}(38^o) = (\mathrm{Sqrt}(0.3790) = 0.616)), \quad \begin{bmatrix} M \\ U \\ T \end{bmatrix}$$

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

$$Ans1 = \begin{bmatrix} .1 = \left(\mathrm{Cos}\left(\frac{5\pi}{12}\right) = \frac{\sqrt{2}\sqrt{3}}{4} - \frac{\sqrt{2}}{4}\right) & .2 = \left(\mathrm{Sin}(105^o) = \frac{\sqrt{2}}{4} + \frac{\sqrt{2}\sqrt{3}}{4}\right) \\ .3 = \left(\mathrm{Tan}\left(\frac{\pi}{12}\right) = 2 - \sqrt{3}\right) & .4 = \left(\mathrm{Sin}\left(\frac{11\pi}{12}\right) = \frac{\sqrt{2}\sqrt{3}}{4} - \frac{\sqrt{2}}{4}\right) \\ .5 = (\mathrm{Tan}(195^o) = 2 - \sqrt{3}) & .6 = (\mathrm{Csc}((-165)^o) = -\sqrt{2}\sqrt{3} - \sqrt{2}) \\ .7 = \left(\mathrm{Sec}\left(\frac{19\pi}{12}\right) = \sqrt{2}\sqrt{3} + \sqrt{2}\right) & .8 = \left(\mathrm{Cos}\left(-\frac{23\pi}{12}\right) = \frac{\sqrt{2}}{4} + \frac{\sqrt{2}\sqrt{3}}{4}\right) \end{bmatrix}, \ , \begin{bmatrix} :) \\ :(\\ M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \\ :) \\ :(\end{bmatrix}$$

$$Ans2 = \begin{bmatrix} .1 = \left(2\,\mathrm{Cos}(22.5^o)^2 - 1 = \left(\mathrm{Cos}(45^o) = \frac{\sqrt{2}}{2}\right)\right) & .2 = \left(\frac{\mathrm{Tan}\left(\frac{2\pi}{5}\right) - \mathrm{Tan}\left(\frac{\pi}{15}\right)}{1 + \mathrm{Tan}\left(\frac{2\pi}{5}\right)\mathrm{Tan}\left(\frac{\pi}{15}\right)} = \left(\mathrm{Tan}\left(\frac{\pi}{3}\right) = \sqrt{3}\right)\right) \\ .3 = \left(\mathrm{Sin}(65^o)\,\mathrm{Cos}(20^o) - \mathrm{Cos}(65^o)\,\mathrm{Sin}(20^o) = \left(\mathrm{Sin}(45^o) = \frac{\sqrt{2}}{2}\right)\right) & .4 = \left(\mathrm{Sin}(18^o)\,\mathrm{Cos}(12^o) + \mathrm{Cos}(18^o)\,\mathrm{Sin}(12^o) = \left(\mathrm{Sin}(30^o) = \frac{1}{2}\right)\right) \\ .5 = \left(\mathrm{Cos}\left(\frac{\pi}{12}\right)^2 - \mathrm{Sin}\left(\frac{\pi}{12}\right)^2 = \left(\mathrm{Cos}\left(\frac{\pi}{6}\right) = \frac{\sqrt{3}}{2}\right)\right) & .6 = \left(2\,\mathrm{Sin}\left(\frac{\pi}{8}\right)\mathrm{Cos}\left(\frac{\pi}{8}\right) = \left(\mathrm{Sin}\left(\frac{\pi}{4}\right) = \frac{\sqrt{2}}{2}\right)\right) \\ .7 = \left(\frac{2\,\mathrm{Tan}(15^o)}{1 - \mathrm{Tan}(15^o)^2} = \left(\mathrm{Tan}(30^o) = \frac{\sqrt{3}}{3}\right)\right) & .8 = \left(1 - 2\,\mathrm{Sin}(15^o)^2 = \left(\mathrm{Cos}(30^o) = \frac{\sqrt{3}}{2}\right)\right) \\ .9 = \left(\mathrm{Cos}\left(\frac{\pi}{9}\right)\mathrm{Cos}\left(\frac{7\pi}{18}\right) - \mathrm{Sin}\left(\frac{\pi}{9}\right)\mathrm{Sin}\left(\frac{7\pi}{18}\right) = \left(\mathrm{Cos}\left(\frac{\pi}{2}\right) = 0\right)\right) & .10 = \left(\mathrm{Cos}(40^o)\,\mathrm{Cos}(10^o) + \mathrm{Sin}(40^o)\,\mathrm{Sin}(10^o) = \left(\mathrm{Cos}(30^o) = \frac{\sqrt{3}}{2}\right)\right) \end{bmatrix}, \ , \begin{bmatrix} :) \\ :(\\ :) \\ :(\\ \left[\left[\begin{matrix} M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \end{matrix}\right]\right] \\ :) \\ :(\\ :) \\ :(\\ :) \\ :(\end{bmatrix}$$

$$Ans3 = \begin{bmatrix} .1 = \left(\mathrm{Cos}(\alpha) = \frac{\sqrt{39}}{8}\right) & .2 = \left(\mathrm{Sin}(\beta) = -\frac{\sqrt{5}}{3}\right) \\ .3 = \left(\mathrm{Tan}(\beta) = -\frac{\sqrt{5}}{2}\right) & .4 = \left(\mathrm{Sin}(\alpha + \beta) = \frac{5}{12} - \frac{\sqrt{39}\sqrt{5}}{24}\right) \\ .5 = \left(\mathrm{Cos}(\alpha - \beta) = \frac{\sqrt{39}}{12} - \frac{5\sqrt{5}}{24}\right) & .6 = \left(\mathrm{Tan}(\beta - \alpha) = -\frac{128\sqrt{5}}{31} - \frac{45\sqrt{39}}{31}\right) \\ .7 = \left(\mathrm{Sin}(2\alpha) = \frac{5\sqrt{39}}{32}\right) & .8 = (\mathrm{Tan}(2\beta) = 4\sqrt{5}) \end{bmatrix}, \ , Ans4 = \begin{bmatrix} .1 = \left(\mathrm{Cos}(\alpha) = -\frac{\sqrt{11}}{6}\right) & .2 = \left(\mathrm{Sin}(\beta) = \frac{2\sqrt{6}}{7}\right) \\ .3 = \left(\mathrm{Tan}(\beta) = -\frac{2\sqrt{6}}{5}\right) & .4 = \left(\mathrm{Sin}(\beta - \alpha) = -\frac{\sqrt{11}\sqrt{6}}{21} - \frac{25}{42}\right) \\ .5 = \left(\mathrm{Cos}(\alpha + \beta) = \frac{5\sqrt{11}}{42} + \frac{5\sqrt{6}}{21}\right) & .6 = \left(\mathrm{Tan}(\alpha - \beta) = -\frac{49\sqrt{11}}{65} - \frac{72\sqrt{6}}{65}\right) \\ .7 = \left(\mathrm{Sin}(2\beta) = -\frac{20\sqrt{6}}{49}\right) & .8 = \left(\mathrm{Tan}(2\alpha) = -\frac{5\sqrt{11}}{7}\right) \end{bmatrix}, \ , \begin{bmatrix} :) \\ :(\\ M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \\ :) \\ :(\end{bmatrix}$$

$$Ans5 = (\mathrm{Cos}(7^o) = (\mathrm{Sqrt}(0.9850) = 0.993)), \ , \begin{bmatrix} M \\ U \\ T \end{bmatrix}$$

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

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$$Ans1 = \begin{bmatrix} .1 = \left(\mathrm{Sin}\left(\frac{\pi}{12}\right) = \frac{\sqrt{2}\sqrt{3}}{4} - \frac{\sqrt{2}}{4}\right) & .2 = \left(\mathrm{Cos}(75^o) = \frac{\sqrt{2}\sqrt{3}}{4} - \frac{\sqrt{2}}{4}\right) \\ .3 = (\mathrm{Tan}(105^o) = -2 - \sqrt{3}) & .4 = \left(\mathrm{Tan}\left(-\frac{5\pi}{12}\right) = -2 - \sqrt{3}\right) \\ .5 = (\mathrm{Cot}((\text{-}285)^o) = 2 - \sqrt{3}) & .6 = \left(\mathrm{Cos}\left(\frac{11\pi}{12}\right) = -\frac{\sqrt{2}}{4} - \frac{\sqrt{2}\sqrt{3}}{4}\right) \\ .7 = (\mathrm{Csc}(345^o) = -\sqrt{2}\sqrt{3} - \sqrt{2}) & .8 = (\mathrm{Sec}((\text{-}105)^o) = -\sqrt{2}\sqrt{3} - \sqrt{2}) \end{bmatrix}, \ , \begin{bmatrix} :) \\ :(\\ M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \\ :) \\ :(\end{bmatrix}$$

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

$$Ans3 = \begin{bmatrix} .1 = \left(\mathrm{Sin}(\alpha) = \frac{2\sqrt{6}}{5}\right) & .2 = \left(\mathrm{Cos}(\beta) = -\frac{\sqrt{15}}{4}\right) \\ .3 = \left(\mathrm{Tan}(\beta) = -\frac{\sqrt{15}}{15}\right) & .4 = \left(\mathrm{Sin}(\alpha - \beta) = -\frac{\sqrt{6}\sqrt{15}}{10} - \frac{1}{20}\right) \\ .5 = \left(\mathrm{Cos}(\alpha + \beta) = -\frac{\sqrt{15}}{20} - \frac{\sqrt{6}}{10}\right) & .6 = \left(\mathrm{Tan}(\beta - \alpha) = \frac{25\sqrt{5}\sqrt{3}}{9} + \frac{32\sqrt{2}\sqrt{3}}{9}\right) \\ .7 = \left(\mathrm{Sin}(2\beta) = -\frac{\sqrt{15}}{8}\right) & .8 = \left(\mathrm{Tan}(2\alpha) = -\frac{4\sqrt{6}}{23}\right) \end{bmatrix}, \ , Ans4 = \begin{bmatrix} .1 = \left(\mathrm{Sin}(\alpha) = -\frac{\sqrt{55}}{8}\right) & .2 = \left(\mathrm{Cos}(\beta) = \frac{\sqrt{7}}{4}\right) \\ .3 = \left(\mathrm{Tan}(\alpha) = \frac{\sqrt{55}}{3}\right) & .4 = \left(\mathrm{Sin}(\alpha + \beta) = -\frac{\sqrt{55}\sqrt{7}}{32} + \frac{9}{32}\right) \\ .5 = \left(\mathrm{Cos}(\beta - \alpha) = -\frac{3\sqrt{7}}{32} + \frac{3\sqrt{55}}{32}\right) & .6 = \left(\mathrm{Tan}(\alpha - \beta) = -\frac{\sqrt{55}}{9} - \frac{4\sqrt{7}}{9}\right) \\ .7 = \left(\mathrm{Cos}(2\alpha) = \frac{-23}{32}\right) & .8 = (\mathrm{Tan}(2\beta) = 3\sqrt{7}) \end{bmatrix}, \ , \begin{bmatrix} :) \\ :(\\ M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \\ :) \\ :(\end{bmatrix}$$

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

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

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

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

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

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

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

$$Ans1 = \begin{bmatrix} .1 = \left(\mathrm{Sin}(75^o) = \frac{\sqrt{2}}{4} + \frac{\sqrt{2}\sqrt{3}}{4}\right) & .2 = \left(\mathrm{Cos}\left(\frac{7\pi}{12}\right) = \frac{\sqrt{2}}{4} - \frac{\sqrt{2}\sqrt{3}}{4}\right) \\ .3 = (\mathrm{Tan}(15^o) = 2 - \sqrt{3}) & .4 = (\mathrm{Csc}(255^o) = -\sqrt{2}\sqrt{3} + \sqrt{2}) \\ .5 = \left(\mathrm{Cot}\left(-\frac{7\pi}{12}\right) = 2 - \sqrt{3}\right) & .6 = \left(\mathrm{Tan}\left(-\frac{11\pi}{12}\right) = 2 - \sqrt{3}\right) \\ .7 = \left(\mathrm{Cos}((\text{-}195)^o) = -\frac{\sqrt{2}}{4} - \frac{\sqrt{2}\sqrt{3}}{4}\right) & .8 = \left(\mathrm{Sin}\left(\frac{11\pi}{12}\right) = \frac{\sqrt{2}\sqrt{3}}{4} - \frac{\sqrt{2}}{4}\right) \end{bmatrix}, \quad , \begin{bmatrix} :) \\ :(\\ M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \\ :) \\ :(\end{bmatrix}$$

$$Ans2 = \begin{bmatrix} .1 = \left(\mathrm{Cos}\left(\frac{11\pi}{36}\right)\mathrm{Cos}\left(\frac{\pi}{18}\right) + \mathrm{Sin}\left(\frac{11\pi}{36}\right)\mathrm{Sin}\left(\frac{\pi}{18}\right) = \left(\mathrm{Cos}\left(\frac{\pi}{4}\right) = \frac{\sqrt{2}}{2}\right)\right) & .2 = \left(2\,\mathrm{Sin}\left(\frac{\pi}{8}\right)\mathrm{Cos}\left(\frac{\pi}{8}\right) = \left(\mathrm{Sin}\left(\frac{\pi}{4}\right) = \frac{\sqrt{2}}{2}\right)\right) \\ .3 = \left(\frac{\mathrm{Tan}\left(\frac{\pi}{9}\right) + \mathrm{Tan}\left(\frac{5\pi}{36}\right)}{1 - \mathrm{Tan}\left(\frac{\pi}{9}\right)\mathrm{Tan}\left(\frac{5\pi}{36}\right)} = \left(\mathrm{Tan}\left(\frac{\pi}{4}\right) = 1\right)\right) & .4 = \left(2\,\mathrm{Cos}\left(\frac{\pi}{12}\right)^2 - 1 = \left(\mathrm{Cos}\left(\frac{\pi}{6}\right) = \frac{\sqrt{3}}{2}\right)\right) \\ .5 = \left(\frac{\mathrm{Tan}(80^o) - \mathrm{Tan}(20^o)}{1 + \mathrm{Tan}(80^o)\,\mathrm{Tan}(20^o)} = (\mathrm{Tan}(60^o) = \sqrt{3})\right) & .6 = (\mathrm{Cos}(80^o)\,\mathrm{Cos}(10^o) - \mathrm{Sin}(80^o)\,\mathrm{Sin}(10^o) = (\mathrm{Cos}(90^o) = 0)) \\ .7 = \left(\frac{2\,\mathrm{Tan}\left(\frac{\pi}{12}\right)}{1 - \mathrm{Tan}\left(\frac{\pi}{12}\right)^2} = \left(\mathrm{Tan}\left(\frac{\pi}{6}\right) = \mathrm{Tan}\left(\frac{\pi}{6}\right)\right)\right) & .8 = \left(1 - 2\,\mathrm{Sin}(22.5^o)^2 = \left(\mathrm{Cos}(45^o) = \frac{\sqrt{2}}{2}\right)\right) \\ .9 = \left(\mathrm{Cos}(15^o)^2 - \mathrm{Sin}(15^o)^2 = \left(\mathrm{Cos}(30^o) = \frac{\sqrt{3}}{2}\right)\right) & .10 = \left(\mathrm{Sin}\left(\frac{\pi}{18}\right)\mathrm{Cos}\left(\frac{\pi}{9}\right) + \mathrm{Cos}\left(\frac{\pi}{18}\right)\mathrm{Sin}\left(\frac{\pi}{9}\right) = \left(\mathrm{Sin}\left(\frac{\pi}{6}\right) = \frac{1}{2}\right)\right) \end{bmatrix}, \quad , \begin{bmatrix} :) \\ :(\\ :) \\ :(\\ \left[\left[\begin{matrix} M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \end{matrix}\right]\right] \\ :) \\ :(\\ :) \\ :(\\ :) \\ :(\end{bmatrix}$$

$$Ans3 = \begin{bmatrix} .1 = \left(\mathrm{Sin}(\alpha) = \frac{2\sqrt{6}}{7}\right) & .2 = \left(\mathrm{Cos}(\beta) = -\frac{\sqrt{5}}{3}\right) \\ .3 = \left(\mathrm{Tan}(\alpha) = \frac{2\sqrt{6}}{5}\right) & .4 = \left(\mathrm{Sin}(\beta - \alpha) = -\frac{10}{21} + \frac{2\sqrt{6}\sqrt{5}}{21}\right) \\ .5 = \left(\mathrm{Cos}(\alpha + \beta) = -\frac{5\sqrt{5}}{21} + \frac{4\sqrt{6}}{21}\right) & .6 = \left(\mathrm{Tan}(\alpha - \beta) = \frac{90\sqrt{6}}{29} - \frac{98\sqrt{5}}{29}\right) \\ .7 = \left(\mathrm{Cos}(2\alpha) = \frac{1}{49}\right) & .8 = (\mathrm{Tan}(2\beta) = 4\sqrt{5}) \end{bmatrix}, \quad , \; Ans4 = \begin{bmatrix} .1 = \left(\mathrm{Sin}(\alpha) = \frac{\sqrt{5}}{3}\right) & .2 = \left(\mathrm{Cos}(\beta) = \frac{2\sqrt{10}}{7}\right) \\ .3 = \left(\mathrm{Tan}(\alpha) = -\frac{\sqrt{5}}{2}\right) & .4 = \left(\mathrm{Sin}(\alpha - \beta) = \frac{2\sqrt{5}\sqrt{10}}{21} - \frac{2}{7}\right) \\ .5 = \left(\mathrm{Cos}(\beta - \alpha) = -\frac{4\sqrt{10}}{21} - \frac{\sqrt{5}}{7}\right) & .6 = \left(\mathrm{Tan}(\alpha + \beta) = -\frac{98\sqrt{5}}{115} - \frac{54\sqrt{2}\sqrt{5}}{115}\right) \\ .7 = \left(\mathrm{Cos}(2\alpha) = \frac{-1}{9}\right) & .8 = \left(\mathrm{Tan}(2\beta) = -\frac{12\sqrt{10}}{31}\right) \end{bmatrix}, \quad , \begin{bmatrix} :) \\ :(\\ M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \\ :) \\ :(\end{bmatrix}$$

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

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

$$Ans1 = \begin{bmatrix} .1 = \left(\mathrm{Sin}\left(\frac{5\pi}{12}\right) = \frac{\sqrt{2}}{4} + \frac{\sqrt{2}\sqrt{3}}{4}\right) & .2 = \left(\mathrm{Cos}(15^o) = \frac{\sqrt{2}}{4} + \frac{\sqrt{2}\sqrt{3}}{4}\right) \\ .3 = (\mathrm{Tan}(105^o) = -2 - \sqrt{3}) & .4 = \left(\mathrm{Cos}((-345)^o) = \frac{\sqrt{2}}{4} + \frac{\sqrt{2}\sqrt{3}}{4}\right) \\ .5 = \left(\mathrm{Tan}\left(-\frac{13\pi}{12}\right) = -2 + \sqrt{3}\right) & .6 = \left(\mathrm{Cot}\left(-\frac{7\pi}{12}\right) = 2 - \sqrt{3}\right) \\ .7 = (\mathrm{Csc}(195^o) = -\sqrt{2}\sqrt{3} - \sqrt{2}) & .8 = (\mathrm{Sec}((-15)^o) = \sqrt{2}\sqrt{3} - \sqrt{2}) \end{bmatrix}, \begin{bmatrix} :) \\ :(\\ M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \\ :) \\ :(\end{bmatrix}$$

$$Ans2 = \begin{bmatrix} .1 = \left(1 - 2\,\mathrm{Sin}\left(\frac{\pi}{8}\right)^2 = \left(\mathrm{Cos}\left(\frac{\pi}{4}\right) = \frac{\sqrt{2}}{2}\right)\right) & .2 = \left(2\,\mathrm{Sin}(22.5^o)\,\mathrm{Cos}(22.5^o) = \left(\mathrm{Sin}(45^o) = \frac{\sqrt{2}}{2}\right)\right) \\ .3 = \left(\mathrm{Sin}(50^o)\,\mathrm{Cos}(10^o) + \mathrm{Cos}(50^o)\,\mathrm{Sin}(10^o) = \left(\mathrm{Sin}(60^o) = \frac{\sqrt{3}}{2}\right)\right) & .4 = \left(\frac{\mathrm{Tan}\left(\frac{4\pi}{9}\right) - \mathrm{Tan}\left(\frac{\pi}{9}\right)}{1 + \mathrm{Tan}\left(\frac{4\pi}{9}\right)\mathrm{Tan}\left(\frac{\pi}{9}\right)} = \left(\mathrm{Tan}\left(\frac{\pi}{3}\right) = \sqrt{3}\right)\right) \\ .5 = \left(\mathrm{Sin}\left(\frac{11\pi}{36}\right)\mathrm{Cos}\left(\frac{\pi}{18}\right) - \mathrm{Cos}\left(\frac{11\pi}{36}\right)\mathrm{Sin}\left(\frac{\pi}{18}\right) = \left(\mathrm{Sin}\left(\frac{\pi}{4}\right) = \frac{\sqrt{2}}{2}\right)\right) & .6 = \left(\frac{2\,\mathrm{Tan}(22.5^o)}{1 - \mathrm{Tan}(22.5^o)^2} = (\mathrm{Tan}(45^o) = 1)\right) \\ .7 = \left(\frac{\mathrm{Tan}(30^o) + \mathrm{Tan}(15^o)}{1 - \mathrm{Tan}(30^o)\,\mathrm{Tan}(15^o)} = (\mathrm{Tan}(45^o) = 1)\right) & .8 = \left(2\,\mathrm{Cos}(15^o)^2 - 1 = \left(\mathrm{Cos}(30^o) = \frac{\sqrt{3}}{2}\right)\right) \\ .9 = (\mathrm{Cos}(110^o)\,\mathrm{Cos}(20^o) + \mathrm{Sin}(110^o)\,\mathrm{Sin}(20^o) = (\mathrm{Cos}(90^o) = 0)) & .10 = \left(\mathrm{Cos}\left(\frac{\pi}{12}\right)^2 - \mathrm{Sin}\left(\frac{\pi}{12}\right)^2 = \left(\mathrm{Cos}\left(\frac{\pi}{6}\right) = \frac{\sqrt{3}}{2}\right)\right) \end{bmatrix}, \begin{bmatrix} :) \\ :(\\ :) \\ :(\\ \left[\left[\begin{matrix} M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \end{matrix}\right]\right] \\ :) \\ :(\\ :) \\ :(\\ :) \\ :(\end{bmatrix}$$

$$Ans3 = \begin{bmatrix} .1 = \left(\mathrm{Cos}(\alpha) = \frac{\sqrt{35}}{6}\right) & .2 = \left(\mathrm{Sin}(\beta) = \frac{\sqrt{11}}{6}\right) \\ .3 = \left(\mathrm{Tan}(\alpha) = \frac{\sqrt{35}}{35}\right) & .4 = \left(\mathrm{Sin}(\beta - \alpha) = \frac{\sqrt{35}\sqrt{11}}{36} + \frac{5}{36}\right) \\ .5 = \left(\mathrm{Cos}(\alpha - \beta) = -\frac{5\sqrt{35}}{36} + \frac{\sqrt{11}}{36}\right) & .6 = \left(\mathrm{Tan}(\alpha + \beta) = \frac{\sqrt{35}}{24} - \frac{5\sqrt{11}}{24}\right) \\ .7 = \left(\mathrm{Cos}(2\beta) = \frac{7}{18}\right) & .8 = \left(\mathrm{Tan}(2\alpha) = \frac{\sqrt{35}}{17}\right) \end{bmatrix}, \quad Ans4 = \begin{bmatrix} .1 = \left(\mathrm{Cos}(\alpha) = \frac{\sqrt{21}}{5}\right) & .2 = \left(\mathrm{Sin}(\beta) = -\frac{\sqrt{3}}{2}\right) \\ .3 = (\mathrm{Tan}(\beta) = \sqrt{3}) & .4 = \left(\mathrm{Sin}(\alpha - \beta) = \frac{1}{5} + \frac{\sqrt{21}\sqrt{3}}{10}\right) \\ .5 = \left(\mathrm{Cos}(\beta - \alpha) = -\frac{\sqrt{21}}{10} + \frac{\sqrt{3}}{5}\right) & .6 = \left(\mathrm{Tan}(\alpha + \beta) = -\frac{8\sqrt{7}\sqrt{3}}{9} + \frac{25\sqrt{3}}{9}\right) \\ .7 = \left(\mathrm{Sin}(2\beta) = \frac{\sqrt{3}}{2}\right) & .8 = \left(\mathrm{Tan}(2\alpha) = -\frac{4\sqrt{21}}{17}\right) \end{bmatrix}, \begin{bmatrix} :) \\ :(\\ M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \\ :) \\ :(\end{bmatrix}$$

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

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

TrigonometryExercise4 Answers for No.10180

$$Ans1 = \begin{bmatrix} .1 = \left(\cos(15^o) = \frac{\sqrt{2}}{4} + \frac{\sqrt{2}\sqrt{3}}{4}\right) & .2 = \left(\sin\left(\frac{7\pi}{12}\right) = \frac{\sqrt{2}}{4} + \frac{\sqrt{2}\sqrt{3}}{4}\right) \\ .3 = (\tan(75^o) = 2 + \sqrt{3}) & .4 = \left(\csc\left(-\frac{19\pi}{12}\right) = \sqrt{2}\sqrt{3} - \sqrt{2}\right) \\ .5 = (\sec(165^o) = -\sqrt{2}\sqrt{3} + \sqrt{2}) & .6 = (\tan((-75)^o) = -2 - \sqrt{3}) \\ .7 = \left(\cot\left(-\frac{\pi}{12}\right) = -2 - \sqrt{3}\right) & .8 = \left(\cos\left(\frac{13\pi}{12}\right) = -\frac{\sqrt{2}}{4} - \frac{\sqrt{2}\sqrt{3}}{4}\right) \end{bmatrix}, \quad , \begin{bmatrix} :) \\ :(\\ M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \\ :) \\ :(\end{bmatrix}$$

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

$$Ans3 = \begin{bmatrix} .1 = \left(\cos(\alpha) = \frac{\sqrt{11}}{6}\right) & .2 = \left(\sin(\beta) = -\frac{3\sqrt{5}}{7}\right) \\ .3 = \left(\tan(\beta) = \frac{3\sqrt{5}}{2}\right) & .4 = \left(\sin(\beta - \alpha) = -\frac{\sqrt{11}\sqrt{5}}{14} + \frac{5}{21}\right) \\ .5 = \left(\cos(\alpha + \beta) = -\frac{\sqrt{11}}{21} + \frac{5\sqrt{5}}{14}\right) & .6 = \left(\tan(\alpha - \beta) = -\frac{245\sqrt{11}}{1081} + \frac{216\sqrt{5}}{1081}\right) \\ .7 = \left(\sin(2\beta) = \frac{12\sqrt{5}}{49}\right) & .8 = \left(\tan(2\alpha) = -\frac{5\sqrt{11}}{7}\right) \end{bmatrix}, \quad , Ans4 = \begin{bmatrix} .1 = \left(\sin(\alpha) = \frac{2\sqrt{10}}{7}\right) & .2 = \left(\cos(\beta) = \frac{\sqrt{5}}{3}\right) \\ .3 = \left(\tan(\beta) = -\frac{2\sqrt{5}}{5}\right) & .4 = \left(\sin(\alpha - \beta) = \frac{2\sqrt{5}\sqrt{10}}{21} - \frac{2}{7}\right) \\ .5 = \left(\cos(\alpha + \beta) = -\frac{\sqrt{5}}{7} + \frac{4\sqrt{10}}{21}\right) & .6 = \left(\tan(\beta - \alpha) = \frac{98\sqrt{5}}{115} - \frac{54\sqrt{2}\sqrt{5}}{115}\right) \\ .7 = \left(\cos(2\alpha) = \frac{-31}{49}\right) & .8 = (\tan(2\beta) = -4\sqrt{5}) \end{bmatrix}, \quad , \begin{bmatrix} :) \\ :(\\ M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \\ :) \\ :(\end{bmatrix}$$

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

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

$$Ans1 = \begin{bmatrix} .1 = \left(\mathrm{Sin}\left(\frac{7\pi}{12}\right) = \frac{\sqrt{2}}{4} + \frac{\sqrt{2}\sqrt{3}}{4}\right) & .2 = \left(\mathrm{Cos}(15^o) = \frac{\sqrt{2}}{4} + \frac{\sqrt{2}\sqrt{3}}{4}\right) \\ .3 = \left(\mathrm{Tan}\left(\frac{5\pi}{12}\right) = 2 + \sqrt{3}\right) & .4 = (\mathrm{Csc}(255^o) = -\sqrt{2}\sqrt{3} + \sqrt{2}) \\ .5 = \left(\mathrm{Cot}\left(\frac{23\pi}{12}\right) = -2 - \sqrt{3}\right) & .6 = \left(\mathrm{Cos}\left(-\frac{5\pi}{12}\right) = \frac{\sqrt{2}\sqrt{3}}{4} - \frac{\sqrt{2}}{4}\right) \\ .7 = \left(\mathrm{Sin}(285^o) = -\frac{\sqrt{2}}{4} - \frac{\sqrt{2}\sqrt{3}}{4}\right) & .8 = (\mathrm{Tan}(195^o) = 2 - \sqrt{3}) \end{bmatrix}, \begin{bmatrix} \frac{:)}{:(} \\ M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \\ \frac{:)}{:(} \end{bmatrix}$$

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

$$Ans3 = \begin{bmatrix} .1 = \left(\mathrm{Cos}(\alpha) = \frac{\sqrt{3}}{2}\right) & .2 = \left(\mathrm{Sin}(\beta) = \frac{2\sqrt{6}}{5}\right) \\ .3 = (\mathrm{Tan}(\beta) = -2\sqrt{6}) & .4 = \left(\mathrm{Sin}(\alpha - \beta) = -\frac{1}{10} - \frac{\sqrt{3}\sqrt{6}}{5}\right) \\ .5 = \left(\mathrm{Cos}(\beta - \alpha) = -\frac{\sqrt{3}}{10} + \frac{\sqrt{6}}{5}\right) & .6 = \left(\mathrm{Tan}(\alpha + \beta) = -\frac{25\sqrt{3}}{21} + \frac{8\sqrt{2}\sqrt{3}}{21}\right) \\ .7 = \left(\mathrm{Sin}(2\beta) = -\frac{4\sqrt{6}}{25}\right) & .8 = (\mathrm{Tan}(2\alpha) = \sqrt{3}) \end{bmatrix}, \; Ans4 = \begin{bmatrix} .1 = \left(\mathrm{Sin}(\alpha) = -\frac{2\sqrt{14}}{9}\right) & .2 = \left(\mathrm{Cos}(\beta) = -\frac{\sqrt{11}}{6}\right) \\ .3 = \left(\mathrm{Tan}(\beta) = \frac{5\sqrt{11}}{11}\right) & .4 = \left(\mathrm{Sin}(\beta - \alpha) = -\frac{25}{54} - \frac{\sqrt{14}\sqrt{11}}{27}\right) \\ .5 = \left(\mathrm{Cos}(\alpha - \beta) = -\frac{5\sqrt{11}}{54} + \frac{5\sqrt{14}}{27}\right) & .6 = \left(\mathrm{Tan}(\alpha + \beta) = \frac{8\sqrt{14}}{25} - \frac{9\sqrt{11}}{25}\right) \\ .7 = \left(\mathrm{Sin}(2\alpha) = -\frac{20\sqrt{14}}{81}\right) & .8 = \left(\mathrm{Tan}(2\beta) = -\frac{5\sqrt{11}}{7}\right) \end{bmatrix}, \begin{bmatrix} \frac{:)}{:(} \\ M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \\ \frac{:)}{:(} \end{bmatrix}$$

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

$$Ans6 = (\mathrm{Cos}(29^o) = (\mathrm{Sqrt}(0.7650) = 0.875)), \begin{bmatrix} M \\ U \\ T \end{bmatrix}$$

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$$Ans1 = \begin{bmatrix} .1 = \left(\cos\left(\frac{5\pi}{12}\right) = \frac{\sqrt{2}\sqrt{3}}{4} - \frac{\sqrt{2}}{4}\right) & .2 = \left(\sin(15^o) = \frac{\sqrt{2}\sqrt{3}}{4} - \frac{\sqrt{2}}{4}\right) \\ .3 = (\tan(105^o) = -2 - \sqrt{3}) & .4 = \left(\cos(165^o) = -\frac{\sqrt{2}}{4} - \frac{\sqrt{2}\sqrt{3}}{4}\right) \\ .5 = \left(\sin\left(\frac{23\pi}{12}\right) = \frac{\sqrt{2}}{4} - \frac{\sqrt{2}\sqrt{3}}{4}\right) & .6 = \left(\tan\left(-\frac{\pi}{12}\right) = -2 + \sqrt{3}\right) \\ .7 = (\sec((-255)^o) = -\sqrt{2}\sqrt{3} - \sqrt{2}) & .8 = (\cot(255^o) = 2 - \sqrt{3}) \end{bmatrix}, \quad \begin{bmatrix} :) \\ :(\\ M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \\ :) \\ :(\end{bmatrix}$$

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

$$Ans3 = \begin{bmatrix} .1 = \left(\cos(\alpha) = \frac{\sqrt{15}}{4}\right) & .2 = \left(\sin(\beta) = -\frac{\sqrt{3}}{2}\right) \\ .3 = \left(\tan(\alpha) = \frac{\sqrt{15}}{15}\right) & .4 = \left(\sin(\alpha - \beta) = \frac{1}{8} + \frac{\sqrt{15}\sqrt{3}}{8}\right) \\ .5 = \left(\cos(\beta - \alpha) = \frac{\sqrt{15}}{8} - \frac{\sqrt{3}}{8}\right) & .6 = \left(\tan(\alpha + \beta) = \frac{\sqrt{5}\sqrt{3}}{3} - \frac{4\sqrt{3}}{3}\right) \\ .7 = \left(\cos(2\beta) = \frac{-1}{2}\right) & .8 = \left(\tan(2\alpha) = \frac{\sqrt{15}}{7}\right) \end{bmatrix}, \quad Ans4 = \begin{bmatrix} .1 = \left(\cos(\alpha) = \frac{-4}{5}\right) & .2 = \left(\sin(\beta) = \frac{\sqrt{5}}{3}\right) \\ .3 = \left(\tan(\alpha) = \frac{3}{4}\right) & .4 = \left(\sin(\alpha - \beta) = \frac{2}{5} + \frac{4\sqrt{5}}{15}\right) \\ .5 = \left(\cos(\alpha + \beta) = \frac{8}{15} + \frac{\sqrt{5}}{5}\right) & .6 = \left(\tan(\beta - \alpha) = -\frac{50\sqrt{5}}{19} - \frac{108}{19}\right) \\ .7 = \left(\cos(2\beta) = \frac{-1}{9}\right) & .8 = \left(\tan(2\alpha) = \frac{24}{7}\right) \end{bmatrix}, \quad \begin{bmatrix} :) \\ :(\\ M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \\ :) \\ :(\end{bmatrix}$$

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

$$Ans6 = (\sin(16^o) = (\mathrm{Sqrt}(0.0760) = 0.276)), \quad \begin{bmatrix} M \\ U \\ T \end{bmatrix}$$

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TrigonometryExercise4 Answers for No.10281

$$Ans1 = \begin{bmatrix} .1 = \left(\mathrm{Sin}\left(\frac{5\pi}{12}\right) = \frac{\sqrt{2}}{4} + \frac{\sqrt{2}\sqrt{3}}{4}\right) & .2 = \left(\mathrm{Cos}(105^{o}) = \frac{\sqrt{2}}{4} - \frac{\sqrt{2}\sqrt{3}}{4}\right) \\ .3 = (\mathrm{Tan}(15^{o}) = 2 - \sqrt{3}) & .4 = \left(\mathrm{Cos}((-195)^{o}) = -\frac{\sqrt{2}}{4} - \frac{\sqrt{2}\sqrt{3}}{4}\right) \\ .5 = \left(\mathrm{Csc}\left(\frac{19\pi}{12}\right) = -\sqrt{2}\sqrt{3} + \sqrt{2}\right) & .6 = \left(\mathrm{Sec}\left(-\frac{\pi}{12}\right) = \sqrt{2}\sqrt{3} - \sqrt{2}\right) \\ .7 = (\mathrm{Cot}((-255)^{o}) = -2 + \sqrt{3}) & .8 = \left(\mathrm{Tan}\left(\frac{17\pi}{12}\right) = 2 + \sqrt{3}\right) \end{bmatrix}, \quad , \begin{bmatrix} :) \\ :(\\ M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \\ :) \\ :(\end{bmatrix}$$

$$Ans2 = \begin{bmatrix} .1 = \left(\frac{2\,\mathrm{Tan}\left(\frac{\pi}{12}\right)}{1 - \mathrm{Tan}\left(\frac{\pi}{12}\right)^{2}} = \left(\mathrm{Tan}\left(\frac{\pi}{6}\right) = \mathrm{Tan}\left(\frac{\pi}{6}\right)\right)\right) & .2 = \left(\mathrm{Sin}\left(\frac{\pi}{9}\right)\mathrm{Cos}\left(\frac{7\pi}{18}\right) + \mathrm{Cos}\left(\frac{\pi}{9}\right)\mathrm{Sin}\left(\frac{7\pi}{18}\right) = \left(\mathrm{Sin}\left(\frac{\pi}{2}\right) = 1\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(\frac{\mathrm{Tan}(85^{o}) - \mathrm{Tan}(25^{o})}{1 + \mathrm{Tan}(85^{o})\,\mathrm{Tan}(25^{o})} = (\mathrm{Tan}(60^{o}) = \sqrt{3})\right) \\ .5 = \left(\mathrm{Cos}\left(\frac{11\pi}{36}\right)\mathrm{Cos}\left(\frac{\pi}{18}\right) + \mathrm{Sin}\left(\frac{11\pi}{36}\right)\mathrm{Sin}\left(\frac{\pi}{18}\right) = \left(\mathrm{Cos}\left(\frac{\pi}{4}\right) = \frac{\sqrt{2}}{2}\right)\right) & .6 = \left(2\,\mathrm{Cos}\left(\frac{\pi}{8}\right)^{2} - 1 = \left(\mathrm{Cos}\left(\frac{\pi}{4}\right) = \frac{\sqrt{2}}{2}\right)\right) \\ .7 = \left(1 - 2\,\mathrm{Sin}(22.5^{o})^{2} = \left(\mathrm{Cos}(45^{o}) = \frac{\sqrt{2}}{2}\right)\right) & .8 = \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) \\ .9 = \left(\mathrm{Cos}(15^{o})^{2} - \mathrm{Sin}(15^{o})^{2} = \left(\mathrm{Cos}(30^{o}) = \frac{\sqrt{3}}{2}\right)\right) & .10 = \left(2\,\mathrm{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}, \quad , \begin{bmatrix} :) \\ :(\\ :) \\ :(\\ \begin{bmatrix}\begin{bmatrix}\begin{bmatrix} M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \end{bmatrix}\end{bmatrix}\end{bmatrix} \\ :) \\ :(\\ :) \\ :(\\ :) \\ :(\end{bmatrix}$$

$$Ans3 = \begin{bmatrix} .1 = \left(\mathrm{Cos}(\alpha) = \frac{2\sqrt{10}}{7}\right) & .2 = \left(\mathrm{Sin}(\beta) = -\frac{\sqrt{5}}{3}\right) \\ .3 = \left(\mathrm{Tan}(\beta) = -\frac{\sqrt{5}}{2}\right) & .4 = \left(\mathrm{Sin}(\alpha - \beta) = \frac{2}{7} + \frac{2\sqrt{5}\sqrt{10}}{21}\right) \\ .5 = \left(\mathrm{Cos}(\beta - \alpha) = -\frac{\sqrt{5}}{7} + \frac{4\sqrt{10}}{21}\right) & .6 = \left(\mathrm{Tan}(\alpha + \beta) = -\frac{98\sqrt{5}}{115} + \frac{54\sqrt{2}\sqrt{5}}{115}\right) \\ .7 = \left(\mathrm{Sin}(2\beta) = -\frac{4\sqrt{5}}{9}\right) & .8 = \left(\mathrm{Tan}(2\alpha) = \frac{12\sqrt{10}}{31}\right) \end{bmatrix}, \quad , \quad Ans4 = \begin{bmatrix} .1 = \left(\mathrm{Sin}(\alpha) = -\frac{\sqrt{3}}{2}\right) & .2 = \left(\mathrm{Cos}(\beta) = -\frac{\sqrt{39}}{8}\right) \\ .3 = \left(\mathrm{Tan}(\beta) = -\frac{5\sqrt{39}}{39}\right) & .4 = \left(\mathrm{Sin}(\alpha - \beta) = \frac{\sqrt{3}\sqrt{39}}{16} + \frac{5}{16}\right) \\ .5 = \left(\mathrm{Cos}(\beta - \alpha) = \frac{\sqrt{39}}{16} - \frac{5\sqrt{3}}{16}\right) & .6 = \left(\mathrm{Tan}(\alpha + \beta) = -\frac{16\sqrt{3}}{9} + \frac{5\sqrt{3}\sqrt{13}}{9}\right) \\ .7 = \left(\mathrm{Cos}(2\alpha) = \frac{-1}{2}\right) & .8 = \left(\mathrm{Tan}(2\beta) = -\frac{5\sqrt{39}}{7}\right) \end{bmatrix}, \quad , \begin{bmatrix} :) \\ :(\\ M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \\ :) \\ :(\end{bmatrix}$$

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

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

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TrigonometryExercise4 Answers for No.10437

$$Ans1 = \begin{bmatrix} .1 = \left(\mathrm{Sin}\left(\frac{5\pi}{12}\right) = \frac{\sqrt{2}}{4} + \frac{\sqrt{2}\sqrt{3}}{4}\right) & .2 = \left(\mathrm{Cos}(15^o) = \frac{\sqrt{2}}{4} + \frac{\sqrt{2}\sqrt{3}}{4}\right) \\ .3 = (\mathrm{Tan}(105^o) = -2 - \sqrt{3}) & .4 = \left(\mathrm{Sin}(345^o) = \frac{\sqrt{2}}{4} - \frac{\sqrt{2}\sqrt{3}}{4}\right) \\ .5 = \left(\mathrm{Sec}\left(-\frac{17\pi}{12}\right) = -\sqrt{2}\sqrt{3} - \sqrt{2}\right) & .6 = (\mathrm{Csc}(195^o) = -\sqrt{2}\sqrt{3} - \sqrt{2}) \\ .7 = \left(\mathrm{Cot}\left(-\frac{19\pi}{12}\right) = 2 - \sqrt{3}\right) & .8 = \left(\mathrm{Cos}(255^o) = \frac{\sqrt{2}}{4} - \frac{\sqrt{2}\sqrt{3}}{4}\right) \end{bmatrix}, \ , \begin{bmatrix} \underline{:)} \\ :(\\ M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \\ \underline{:)} \\ :(\end{bmatrix}$$

$$Ans2 = \begin{bmatrix} .1 = \left(\mathrm{Cos}(15^o)^2 - \mathrm{Sin}(15^o)^2 = \left(\mathrm{Cos}(30^o) = \frac{\sqrt{3}}{2}\right)\right) & .2 = \left(\frac{\mathrm{Tan}(65^o) - \mathrm{Tan}(20^o)}{1 + \mathrm{Tan}(65^o)\,\mathrm{Tan}(20^o)} = (\mathrm{Tan}(45^o) = 1)\right) \\ .3 = \left(\mathrm{Sin}\left(\frac{2\pi}{9}\right)\mathrm{Cos}\left(\frac{\pi}{9}\right) + \mathrm{Cos}\left(\frac{2\pi}{9}\right)\mathrm{Sin}\left(\frac{\pi}{9}\right) = \left(\mathrm{Sin}\left(\frac{\pi}{3}\right) = \frac{\sqrt{3}}{2}\right)\right) & .4 = \left(2\,\mathrm{Sin}\left(\frac{\pi}{8}\right)\mathrm{Cos}\left(\frac{\pi}{8}\right) = \left(\mathrm{Sin}\left(\frac{\pi}{4}\right) = \frac{\sqrt{2}}{2}\right)\right) \\ .5 = \left(\mathrm{Sin}\left(\frac{7\pi}{18}\right)\mathrm{Cos}\left(\frac{\pi}{18}\right) - \mathrm{Cos}\left(\frac{7\pi}{18}\right)\mathrm{Sin}\left(\frac{\pi}{18}\right) = \left(\mathrm{Sin}\left(\frac{\pi}{3}\right) = \frac{\sqrt{3}}{2}\right)\right) & .6 = \left(1 - 2\,\mathrm{Sin}(22.5^o)^2 = \left(\mathrm{Cos}(45^o) = \frac{\sqrt{2}}{2}\right)\right) \\ .7 = \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) & .8 = \left(\frac{2\,\mathrm{Tan}\left(\frac{\pi}{8}\right)}{1 - \mathrm{Tan}\left(\frac{\pi}{8}\right)^2} = \left(\mathrm{Tan}\left(\frac{\pi}{4}\right) = \mathrm{Tan}\left(\frac{\pi}{4}\right)\right)\right) \\ .9 = \left(2\,\mathrm{Cos}\left(\frac{\pi}{12}\right)^2 - 1 = \left(\mathrm{Cos}\left(\frac{\pi}{6}\right) = \frac{\sqrt{3}}{2}\right)\right) & .10 = \left(\mathrm{Cos}\left(\frac{7\pi}{30}\right)\mathrm{Cos}\left(\frac{\pi}{15}\right) + \mathrm{Sin}\left(\frac{7\pi}{30}\right)\mathrm{Sin}\left(\frac{\pi}{15}\right) = \left(\mathrm{Cos}\left(\frac{\pi}{6}\right) = \frac{\sqrt{3}}{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}$$

$$Ans3 = \begin{bmatrix} .1 = \left(\mathrm{Sin}(\alpha) = \frac{2\sqrt{2}}{3}\right) & .2 = \left(\mathrm{Cos}(\beta) = \frac{3}{5}\right) \\ .3 = \left(\mathrm{Tan}(\beta) = \frac{-4}{3}\right) & .4 = \left(\mathrm{Sin}(\beta - \alpha) = -\frac{4}{15} - \frac{2\sqrt{2}}{5}\right) \\ .5 = \left(\mathrm{Cos}(\alpha - \beta) = \frac{1}{5} - \frac{8\sqrt{2}}{15}\right) & .6 = \left(\mathrm{Tan}(\alpha + \beta) = -\frac{50\sqrt{2}}{119} + \frac{108}{119}\right) \\ .7 = \left(\mathrm{Sin}(2\alpha) = \frac{4\sqrt{2}}{9}\right) & .8 = \left(\mathrm{Tan}(2\beta) = \frac{24}{7}\right) \end{bmatrix}, \ , \ Ans4 = \begin{bmatrix} .1 = \left(\mathrm{Cos}(\alpha) = -\frac{\sqrt{3}}{2}\right) & .2 = \left(\mathrm{Sin}(\beta) = \frac{2\sqrt{14}}{9}\right) \\ .3 = \left(\mathrm{Tan}(\beta) = -\frac{2\sqrt{14}}{5}\right) & .4 = \left(\mathrm{Sin}(\beta - \alpha) = -\frac{\sqrt{3}\sqrt{14}}{9} - \frac{5}{18}\right) \\ .5 = \left(\mathrm{Cos}(\alpha + \beta) = \frac{5\sqrt{3}}{18} + \frac{\sqrt{14}}{9}\right) & .6 = \left(\mathrm{Tan}(\alpha - \beta) = \frac{81\sqrt{3}}{19} + \frac{40\sqrt{14}}{19}\right) \\ .7 = \left(\mathrm{Cos}(2\beta) = \frac{-31}{81}\right) & .8 = (\mathrm{Tan}(2\alpha) = \sqrt{3}) \end{bmatrix}, \ , \begin{bmatrix} \underline{:)} \\ :(\\ M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \\ \underline{:)} \\ :(\end{bmatrix}$$

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

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

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TrigonometryExercise4 Answers for No.10493

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

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

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

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

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

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

$$Ans2 = \begin{bmatrix} .1 = \left(\frac{\mathrm{Tan}\left(\frac{11\pi}{36}\right) - \mathrm{Tan}\left(\frac{\pi}{18}\right)}{1 + \mathrm{Tan}\left(\frac{11\pi}{36}\right)\mathrm{Tan}\left(\frac{\pi}{18}\right)} = \left(\mathrm{Tan}\left(\frac{\pi}{4}\right) = 1\right)\right) & .2 = (\mathrm{Cos}(102^o)\,\mathrm{Cos}(12^o) + \mathrm{Sin}(102^o)\,\mathrm{Sin}(12^o) = (\mathrm{Cos}(90^o) = 0)) \\ .3 = \left(2\,\mathrm{Cos}(15^o)^2 - 1 = \left(\mathrm{Cos}(30^o) = \frac{\sqrt{3}}{2}\right)\right) & .4 = \left(1 - 2\,\mathrm{Sin}(22.5^o)^2 = \left(\mathrm{Cos}(45^o) = \frac{\sqrt{2}}{2}\right)\right) \\ .5 = \left(\frac{2\,\mathrm{Tan}(15^o)}{1 - \mathrm{Tan}(15^o)^2} = \left(\mathrm{Tan}(30^o) = \frac{\sqrt{3}}{3}\right)\right) & .6 = \left(\mathrm{Cos}\left(\frac{\pi}{12}\right)^2 - \mathrm{Sin}\left(\frac{\pi}{12}\right)^2 = \left(\mathrm{Cos}\left(\frac{\pi}{6}\right) = \frac{\sqrt{3}}{2}\right)\right) \\ .7 = (\mathrm{Cos}(78^o)\,\mathrm{Cos}(12^o) - \mathrm{Sin}(78^o)\,\mathrm{Sin}(12^o) = (\mathrm{Cos}(90^o) = 0)) & .8 = \left(2\,\mathrm{Sin}\left(\frac{\pi}{8}\right)\mathrm{Cos}\left(\frac{\pi}{8}\right) = \left(\mathrm{Sin}\left(\frac{\pi}{4}\right) = \frac{\sqrt{2}}{2}\right)\right) \\ .9 = \left(\mathrm{Sin}(80^o)\,\mathrm{Cos}(20^o) - \mathrm{Cos}(80^o)\,\mathrm{Sin}(20^o) = \left(\mathrm{Sin}(60^o) = \frac{\sqrt{3}}{2}\right)\right) & .10 = \left(\mathrm{Sin}\left(\frac{\pi}{18}\right)\mathrm{Cos}\left(\frac{\pi}{9}\right) + \mathrm{Cos}\left(\frac{\pi}{18}\right)\mathrm{Sin}\left(\frac{\pi}{9}\right) = \left(\mathrm{Sin}\left(\frac{\pi}{6}\right) = \frac{1}{2}\right)\right) \end{bmatrix}, \begin{bmatrix} :) \\ :(\\ :) \\ :(\\ M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \\ :) \\ :(\\ :) \\ :(\\ :) \\ :(\end{bmatrix}$$

$$Ans3 = \begin{bmatrix} .1 = \left(\mathrm{Sin}(\alpha) = \frac{\sqrt{35}}{6}\right) & .2 = \left(\mathrm{Cos}(\beta) = -\frac{2\sqrt{2}}{3}\right) \\ .3 = \left(\mathrm{Tan}(\beta) = -\frac{\sqrt{2}}{4}\right) & .4 = \left(\mathrm{Sin}(\beta - \alpha) = \frac{1}{18} + \frac{\sqrt{35}\sqrt{2}}{9}\right) \\ .5 = \left(\mathrm{Cos}(\alpha - \beta) = -\frac{\sqrt{2}}{9} + \frac{\sqrt{35}}{18}\right) & .6 = \left(\mathrm{Tan}(\alpha + \beta) = -\frac{\sqrt{35}}{3} + \frac{8\sqrt{2}}{3}\right) \\ .7 = \left(\mathrm{Sin}(2\beta) = -\frac{4\sqrt{2}}{9}\right) & .8 = \left(\mathrm{Tan}(2\alpha) = -\frac{\sqrt{35}}{17}\right) \end{bmatrix}, \quad Ans4 = \begin{bmatrix} .1 = \left(\mathrm{Cos}(\alpha) = -\frac{\sqrt{15}}{4}\right) & .2 = \left(\mathrm{Sin}(\beta) = -\frac{\sqrt{33}}{7}\right) \\ .3 = \left(\mathrm{Tan}(\alpha) = \frac{\sqrt{15}}{15}\right) & .4 = \left(\mathrm{Sin}(\alpha + \beta) = -\frac{1}{7} + \frac{\sqrt{15}\sqrt{33}}{28}\right) \\ .5 = \left(\mathrm{Cos}(\alpha - \beta) = -\frac{\sqrt{15}}{7} + \frac{\sqrt{33}}{28}\right) & .6 = \left(\mathrm{Tan}(\beta - \alpha) = -\frac{64\sqrt{3}\sqrt{11}}{207} - \frac{49\sqrt{5}\sqrt{3}}{207}\right) \\ .7 = \left(\mathrm{Sin}(2\beta) = -\frac{8\sqrt{33}}{49}\right) & .8 = \left(\mathrm{Tan}(2\alpha) = \frac{\sqrt{15}}{7}\right) \end{bmatrix}, \begin{bmatrix} :) \\ :(\\ M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \\ :) \\ :(\end{bmatrix}$$

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

$$Ans6 = (\mathrm{Sin}(36^o) = (\mathrm{Sqrt}(0.3455) = 0.588)), \begin{bmatrix} M \\ U \\ T \end{bmatrix}$$

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$$Ans1 = \begin{bmatrix} .1 = \left(\mathrm{Cos}(105^o) = \frac{\sqrt{2}}{4} - \frac{\sqrt{2}\sqrt{3}}{4}\right) & .2 = \left(\mathrm{Sin}\left(\frac{5\pi}{12}\right) = \frac{\sqrt{2}}{4} + \frac{\sqrt{2}\sqrt{3}}{4}\right) \\ .3 = (\mathrm{Tan}(15^o) = 2 - \sqrt{3}) & .4 = (\mathrm{Cot}(255^o) = 2 - \sqrt{3}) \\ .5 = \left(\mathrm{Tan}\left(\frac{19\pi}{12}\right) = -2 - \sqrt{3}\right) & .6 = \left(\mathrm{Sin}((-195)^o) = \frac{\sqrt{2}\sqrt{3}}{4} - \frac{\sqrt{2}}{4}\right) \\ .7 = \left(\mathrm{Cos}\left(-\frac{17\pi}{12}\right) = \frac{\sqrt{2}}{4} - \frac{\sqrt{2}\sqrt{3}}{4}\right) & .8 = \left(\mathrm{Csc}\left(\frac{23\pi}{12}\right) = -\sqrt{2}\sqrt{3} - \sqrt{2}\right) \end{bmatrix}, \ , \begin{bmatrix} :) \\ :(\\ M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \\ :) \\ :(\end{bmatrix}$$

$$Ans2 = \begin{bmatrix} .1 = \left(\mathrm{Cos}(15^o)^2 - \mathrm{Sin}(15^o)^2 = \left(\mathrm{Cos}(30^o) = \frac{\sqrt{3}}{2}\right)\right) & .2 = \left(\frac{2\,\mathrm{Tan}(22.5^o)}{1 - \mathrm{Tan}(22.5^o)^2} = (\mathrm{Tan}(45^o) = 1)\right) \\ .3 = \left(\mathrm{Cos}\left(\frac{\pi}{9}\right)\mathrm{Cos}\left(\frac{7\pi}{18}\right) - \mathrm{Sin}\left(\frac{\pi}{9}\right)\mathrm{Sin}\left(\frac{7\pi}{18}\right) = \left(\mathrm{Cos}\left(\frac{\pi}{2}\right) = 0\right)\right) & .4 = \left(2\,\mathrm{Sin}\left(\frac{\pi}{8}\right)\mathrm{Cos}\left(\frac{\pi}{8}\right) = \left(\mathrm{Sin}\left(\frac{\pi}{4}\right) = \frac{\sqrt{2}}{2}\right)\right) \\ .5 = \left(\frac{\mathrm{Tan}\left(\frac{5\pi}{36}\right) + \mathrm{Tan}\left(\frac{7\pi}{36}\right)}{1 - \mathrm{Tan}\left(\frac{5\pi}{36}\right)\mathrm{Tan}\left(\frac{7\pi}{36}\right)} = \left(\mathrm{Tan}\left(\frac{\pi}{3}\right) = \sqrt{3}\right)\right) & .6 = \left(\mathrm{Sin}(25^o)\,\mathrm{Cos}(5^o) + \mathrm{Cos}(25^o)\,\mathrm{Sin}(5^o) = \left(\mathrm{Sin}(30^o) = \frac{1}{2}\right)\right) \\ .7 = \left(\frac{\mathrm{Tan}\left(\frac{2\pi}{5}\right) - \mathrm{Tan}\left(\frac{\pi}{15}\right)}{1 + \mathrm{Tan}\left(\frac{2\pi}{5}\right)\mathrm{Tan}\left(\frac{\pi}{15}\right)} = \left(\mathrm{Tan}\left(\frac{\pi}{3}\right) = \sqrt{3}\right)\right) & .8 = \left(\mathrm{Sin}(50^o)\,\mathrm{Cos}(20^o) - \mathrm{Cos}(50^o)\,\mathrm{Sin}(20^o) = \left(\mathrm{Sin}(30^o) = \frac{1}{2}\right)\right) \\ .9 = \left(2\,\mathrm{Cos}(22.5^o)^2 - 1 = \left(\mathrm{Cos}(45^o) = \frac{\sqrt{2}}{2}\right)\right) & .10 = \left(1 - 2\,\mathrm{Sin}\left(\frac{\pi}{12}\right)^2 = \left(\mathrm{Cos}\left(\frac{\pi}{6}\right) = \frac{\sqrt{3}}{2}\right)\right) \end{bmatrix}, \ , \begin{bmatrix} :) \\ :(\\ :) \\ :(\\ [[M, a, t, h, @, M, U, T]] \\ :) \\ :(\\ :) \\ :(\\ :) \\ :(\end{bmatrix}$$

$$Ans3 = \begin{bmatrix} .1 = \left(\mathrm{Cos}(\alpha) = \frac{\sqrt{11}}{6}\right) & .2 = \left(\mathrm{Sin}(\beta) = \frac{\sqrt{65}}{9}\right) \\ .3 = \left(\mathrm{Tan}(\alpha) = \frac{5\sqrt{11}}{11}\right) & .4 = \left(\mathrm{Sin}(\alpha - \beta) = -\frac{10}{27} - \frac{\sqrt{11}\sqrt{65}}{54}\right) \\ .5 = \left(\mathrm{Cos}(\alpha + \beta) = -\frac{2\sqrt{11}}{27} - \frac{5\sqrt{65}}{54}\right) & .6 = \left(\mathrm{Tan}(\beta - \alpha) = \frac{16\sqrt{65}}{161} + \frac{45\sqrt{11}}{161}\right) \\ .7 = \left(\mathrm{Cos}(2\alpha) = \frac{-7}{18}\right) & .8 = \left(\mathrm{Tan}(2\beta) = \frac{8\sqrt{65}}{49}\right) \end{bmatrix}, \ , Ans4 = \begin{bmatrix} .1 = \left(\mathrm{Cos}(\alpha) = \frac{-4}{5}\right) & .2 = \left(\mathrm{Sin}(\beta) = -\frac{\sqrt{3}}{2}\right) \\ .3 = \left(\mathrm{Tan}(\alpha) = \frac{3}{4}\right) & .4 = \left(\mathrm{Sin}(\alpha + \beta) = -\frac{3}{10} + \frac{2\sqrt{3}}{5}\right) \\ .5 = \left(\mathrm{Cos}(\alpha - \beta) = -\frac{2}{5} + \frac{3\sqrt{3}}{10}\right) & .6 = \left(\mathrm{Tan}(\beta - \alpha) = \frac{25\sqrt{3}}{11} + \frac{48}{11}\right) \\ .7 = \left(\mathrm{Cos}(2\beta) = \frac{-1}{2}\right) & .8 = \left(\mathrm{Tan}(2\alpha) = \frac{24}{7}\right) \end{bmatrix}, \ , \begin{bmatrix} :) \\ :(\\ M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \\ :) \\ :(\end{bmatrix}$$

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

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

TrigonometryExercise4 Answers for No.11068

$$Ans1 = \begin{bmatrix} .1 = \left(\mathrm{Sin}(15^o) = \frac{\sqrt{2}\sqrt{3}}{4} - \frac{\sqrt{2}}{4}\right) & .2 = \left(\mathrm{Cos}\left(\frac{5\pi}{12}\right) = \frac{\sqrt{2}\sqrt{3}}{4} - \frac{\sqrt{2}}{4}\right) \\ .3 = (\mathrm{Tan}(105^o) = -2 - \sqrt{3}) & .4 = \left(\mathrm{Sin}\left(-\frac{11\pi}{12}\right) = \frac{\sqrt{2}}{4} - \frac{\sqrt{2}\sqrt{3}}{4}\right) \\ .5 = (\mathrm{Sec}(285^o) = \sqrt{2}\sqrt{3} + \sqrt{2}) & .6 = (\mathrm{Tan}((-15)^o) = -2 + \sqrt{3}) \\ .7 = \left(\mathrm{Cos}\left(\frac{13\pi}{12}\right) = -\frac{\sqrt{2}}{4} - \frac{\sqrt{2}\sqrt{3}}{4}\right) & .8 = \left(\mathrm{Csc}\left(-\frac{5\pi}{12}\right) = -\sqrt{2}\sqrt{3} + \sqrt{2}\right) \end{bmatrix}, \quad , \begin{bmatrix} :) \\ :(\\ M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \\ :) \\ :(\end{bmatrix}$$

$$Ans2 = \begin{bmatrix} .1 = \left(2\,\mathrm{Cos}(15^o)^2 - 1 = \left(\mathrm{Cos}(30^o) = \frac{\sqrt{3}}{2}\right)\right) & .2 = \left(\mathrm{Cos}(10^o)\,\mathrm{Cos}(20^o) - \mathrm{Sin}(10^o)\,\mathrm{Sin}(20^o) = \left(\mathrm{Cos}(30^o) = \frac{\sqrt{3}}{2}\right)\right) \\ .3 = \left(\frac{\mathrm{Tan}(33^o) + \mathrm{Tan}(12^o)}{1 - \mathrm{Tan}(33^o)\,\mathrm{Tan}(12^o)} = (\mathrm{Tan}(45^o) = 1)\right) & .4 = \left(\frac{2\,\mathrm{Tan}(15^o)}{1 - \mathrm{Tan}(15^o)^2} = \left(\mathrm{Tan}(30^o) = \frac{\sqrt{3}}{3}\right)\right) \\ .5 = \left(\mathrm{Cos}(60^o)\,\mathrm{Cos}(15^o) + \mathrm{Sin}(60^o)\,\mathrm{Sin}(15^o) = \left(\mathrm{Cos}(45^o) = \frac{\sqrt{2}}{2}\right)\right) & .6 = \left(1 - 2\,\mathrm{Sin}\left(\frac{\pi}{12}\right)^2 = \left(\mathrm{Cos}\left(\frac{\pi}{6}\right) = \frac{\sqrt{3}}{2}\right)\right) \\ .7 = \left(\mathrm{Sin}\left(\frac{17\pi}{30}\right)\mathrm{Cos}\left(\frac{\pi}{15}\right) - \mathrm{Cos}\left(\frac{17\pi}{30}\right)\mathrm{Sin}\left(\frac{\pi}{15}\right) = \left(\mathrm{Sin}\left(\frac{\pi}{2}\right) = 1\right)\right) & .8 = \left(\mathrm{Cos}\left(\frac{\pi}{8}\right)^2 - \mathrm{Sin}\left(\frac{\pi}{8}\right)^2 = \left(\mathrm{Cos}\left(\frac{\pi}{4}\right) = \frac{\sqrt{2}}{2}\right)\right) \\ .9 = \left(\frac{\mathrm{Tan}\left(\frac{7\pi}{30}\right) - \mathrm{Tan}\left(\frac{\pi}{15}\right)}{1 + \mathrm{Tan}\left(\frac{7\pi}{30}\right)\mathrm{Tan}\left(\frac{\pi}{15}\right)} = \left(\mathrm{Tan}\left(\frac{\pi}{6}\right) = \frac{\sqrt{3}}{3}\right)\right) & .10 = \left(2\,\mathrm{Sin}(22.5^o)\,\mathrm{Cos}(22.5^o) = \left(\mathrm{Sin}(45^o) = \frac{\sqrt{2}}{2}\right)\right) \end{bmatrix}, \quad , \begin{bmatrix} :) \\ :(\\ :) \\ :(\\ \left[\left[\begin{matrix} M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \end{matrix}\right]\right] \\ :) \\ :(\\ :) \\ :(\\ :) \\ :(\end{bmatrix}$$

$$Ans3 = \begin{bmatrix} .1 = \left(\mathrm{Cos}(\alpha) = \frac{\sqrt{3}}{2}\right) & .2 = \left(\mathrm{Sin}(\beta) = -\frac{\sqrt{21}}{5}\right) \\ .3 = \left(\mathrm{Tan}(\beta) = -\frac{\sqrt{21}}{2}\right) & .4 = \left(\mathrm{Sin}(\beta - \alpha) = -\frac{\sqrt{21}\sqrt{3}}{10} - \frac{1}{5}\right) \\ .5 = \left(\mathrm{Cos}(\alpha + \beta) = \frac{\sqrt{3}}{5} + \frac{\sqrt{21}}{10}\right) & .6 = \left(\mathrm{Tan}(\alpha - \beta) = -\frac{25\sqrt{3}}{9} - \frac{8\sqrt{7}\sqrt{3}}{9}\right) \\ .7 = \left(\mathrm{Sin}(2\alpha) = \frac{\sqrt{3}}{2}\right) & .8 = \left(\mathrm{Tan}(2\beta) = \frac{4\sqrt{21}}{17}\right) \end{bmatrix}, \quad , Ans4 = \begin{bmatrix} .1 = \left(\mathrm{Cos}(\alpha) = -\frac{\sqrt{3}}{2}\right) & .2 = \left(\mathrm{Sin}(\beta) = -\frac{2\sqrt{14}}{9}\right) \\ .3 = \left(\mathrm{Tan}(\beta) = \frac{2\sqrt{14}}{5}\right) & .4 = \left(\mathrm{Sin}(\alpha - \beta) = -\frac{\sqrt{3}\sqrt{14}}{9} - \frac{5}{18}\right) \\ .5 = \left(\mathrm{Cos}(\alpha + \beta) = \frac{5\sqrt{3}}{18} + \frac{\sqrt{14}}{9}\right) & .6 = \left(\mathrm{Tan}(\beta - \alpha) = \frac{81\sqrt{3}}{19} + \frac{40\sqrt{14}}{19}\right) \\ .7 = \left(\mathrm{Cos}(2\alpha) = \frac{1}{2}\right) & .8 = \left(\mathrm{Tan}(2\beta) = -\frac{20\sqrt{14}}{31}\right) \end{bmatrix}, \quad , \begin{bmatrix} :) \\ :(\\ M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \\ :) \\ :(\end{bmatrix}$$

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

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

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$$Ans1 = \begin{bmatrix} .1 = \left(\mathrm{Cos}(75^o) = \frac{\sqrt{2}\sqrt{3}}{4} - \frac{\sqrt{2}}{4}\right) & .2 = \left(\mathrm{Sin}\left(\frac{\pi}{12}\right) = \frac{\sqrt{2}\sqrt{3}}{4} - \frac{\sqrt{2}}{4}\right) \\ .3 = (\mathrm{Tan}(105^o) = -2 - \sqrt{3}) & .4 = \left(\mathrm{Sin}(345^o) = \frac{\sqrt{2}}{4} - \frac{\sqrt{2}\sqrt{3}}{4}\right) \\ .5 = \left(\mathrm{Tan}\left(\frac{17\pi}{12}\right) = 2 + \sqrt{3}\right) & .6 = \left(\mathrm{Cot}\left(\frac{11\pi}{12}\right) = -2 - \sqrt{3}\right) \\ .7 = \left(\mathrm{Cos}((-75)^o) = \frac{\sqrt{2}\sqrt{3}}{4} - \frac{\sqrt{2}}{4}\right) & .8 = \left(\mathrm{Sec}\left(-\frac{7\pi}{12}\right) = -\sqrt{2}\sqrt{3} - \sqrt{2}\right) \end{bmatrix}, \begin{bmatrix} :) \\ :(\\ M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \\ :) \\ :(\end{bmatrix}$$

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

$$Ans3 = \begin{bmatrix} .1 = \left(\mathrm{Sin}(\alpha) = \frac{2\sqrt{2}}{3}\right) & .2 = \left(\mathrm{Cos}(\beta) = \frac{2\sqrt{14}}{9}\right) \\ .3 = \left(\mathrm{Tan}(\beta) = -\frac{5\sqrt{14}}{28}\right) & .4 = \left(\mathrm{Sin}(\alpha+\beta) = \frac{4\sqrt{2}\sqrt{14}}{27} - \frac{5}{27}\right) \\ .5 = \left(\mathrm{Cos}(\alpha-\beta) = \frac{2\sqrt{14}}{27} - \frac{10\sqrt{2}}{27}\right) & .6 = \left(\mathrm{Tan}(\beta-\alpha) = \frac{5\sqrt{2}\sqrt{7}}{8} + \frac{9\sqrt{2}}{8}\right) \\ .7 = \left(\mathrm{Cos}(2\beta) = \frac{31}{81}\right) & .8 = \left(\mathrm{Tan}(2\alpha) = -\frac{4\sqrt{2}}{7}\right) \end{bmatrix}, Ans4 = \begin{bmatrix} .1 = \left(\mathrm{Sin}(\alpha) = \frac{\sqrt{3}}{2}\right) & .2 = \left(\mathrm{Cos}(\beta) = -\frac{3\sqrt{5}}{7}\right) \\ .3 = (\mathrm{Tan}(\alpha) = -\sqrt{3}) & .4 = \left(\mathrm{Sin}(\alpha+\beta) = -\frac{3\sqrt{5}\sqrt{3}}{14} + \frac{1}{7}\right) \\ .5 = \left(\mathrm{Cos}(\beta-\alpha) = \frac{3\sqrt{5}}{14} - \frac{\sqrt{3}}{7}\right) & .6 = \left(\mathrm{Tan}(\alpha-\beta) = -\frac{49\sqrt{3}}{33} - \frac{8\sqrt{5}}{11}\right) \\ .7 = \left(\mathrm{Sin}(2\alpha) = -\frac{\sqrt{3}}{2}\right) & .8 = \left(\mathrm{Tan}(2\beta) = \frac{12\sqrt{5}}{41}\right) \end{bmatrix}, \begin{bmatrix} :) \\ :(\\ M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \\ :) \\ :(\end{bmatrix}$$

$$Ans5 = (\mathrm{Cos}(6^o) = (\mathrm{Sqrt}(0.9890) = 0.995)), \begin{bmatrix} M \\ U \\ T \end{bmatrix}$$

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

$$Ans1 = \begin{bmatrix} .1 = \left(\mathrm{Sin}\left(\frac{7\pi}{12}\right) = \frac{\sqrt{2}}{4} + \frac{\sqrt{2}\sqrt{3}}{4}\right) & .2 = \left(\mathrm{Cos}(75^o) = \frac{\sqrt{2}\sqrt{3}}{4} - \frac{\sqrt{2}}{4}\right) \\ .3 = \left(\mathrm{Tan}\left(\frac{\pi}{12}\right) = 2 - \sqrt{3}\right) & .4 = \left(\mathrm{Cos}\left(\frac{11\pi}{12}\right) = -\frac{\sqrt{2}}{4} - \frac{\sqrt{2}\sqrt{3}}{4}\right) \\ .5 = (\mathrm{Cot}(345^o) = -2 - \sqrt{3}) & .6 = \left(\mathrm{Csc}\left(-\frac{17\pi}{12}\right) = \sqrt{2}\sqrt{3} - \sqrt{2}\right) \\ .7 = \left(\mathrm{Sin}((-195)^o) = \frac{\sqrt{2}\sqrt{3}}{4} - \frac{\sqrt{2}}{4}\right) & .8 = (\mathrm{Sec}((-285)^o) = \sqrt{2}\sqrt{3} + \sqrt{2}) \end{bmatrix}, \begin{bmatrix} :) \\ :(\\ M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \\ :) \\ :(\end{bmatrix}$$

$$Ans2 = \begin{bmatrix} .1 = \left(\mathrm{Cos}\left(\frac{\pi}{12}\right)^2 - \mathrm{Sin}\left(\frac{\pi}{12}\right)^2 = \left(\mathrm{Cos}\left(\frac{\pi}{6}\right) = \frac{\sqrt{3}}{2}\right)\right) & .2 = (\mathrm{Sin}(78^o)\,\mathrm{Cos}(12^o) + \mathrm{Cos}(78^o)\,\mathrm{Sin}(12^o) = (\mathrm{Sin}(90^o) = 1)) \\ .3 = (\mathrm{Sin}(105^o)\,\mathrm{Cos}(15^o) - \mathrm{Cos}(105^o)\,\mathrm{Sin}(15^o) = (\mathrm{Sin}(90^o) = 1)) & .4 = \left(\frac{2\,\mathrm{Tan}(22.5^o)}{1 - \mathrm{Tan}(22.5^o)^2} = (\mathrm{Tan}(45^o) = 1)\right) \\ .5 = \left(1 - 2\,\mathrm{Sin}\left(\frac{\pi}{8}\right)^2 = \left(\mathrm{Cos}\left(\frac{\pi}{4}\right) = \frac{\sqrt{2}}{2}\right)\right) & .6 = \left(2\,\mathrm{Cos}(22.5^o)^2 - 1 = \left(\mathrm{Cos}(45^o) = \frac{\sqrt{2}}{2}\right)\right) \\ .7 = \left(\frac{\mathrm{Tan}\left(\frac{5\pi}{36}\right) + \mathrm{Tan}\left(\frac{\pi}{36}\right)}{1 - \mathrm{Tan}\left(\frac{5\pi}{36}\right)\mathrm{Tan}\left(\frac{\pi}{36}\right)} = \left(\mathrm{Tan}\left(\frac{\pi}{6}\right) = \frac{\sqrt{3}}{3}\right)\right) & .8 = \left(\mathrm{Cos}\left(\frac{19\pi}{60}\right)\mathrm{Cos}\left(\frac{\pi}{15}\right) + \mathrm{Sin}\left(\frac{19\pi}{60}\right)\mathrm{Sin}\left(\frac{\pi}{15}\right) = \left(\mathrm{Cos}\left(\frac{\pi}{4}\right) = \frac{\sqrt{2}}{2}\right)\right) \\ .9 = \left(\frac{\mathrm{Tan}(40^o) - \mathrm{Tan}(10^o)}{1 + \mathrm{Tan}(40^o)\,\mathrm{Tan}(10^o)} = \left(\mathrm{Tan}(30^o) = \frac{\sqrt{3}}{3}\right)\right) & .10 = \left(2\,\mathrm{Sin}(15^o)\,\mathrm{Cos}(15^o) = \left(\mathrm{Sin}(30^o) = \frac{1}{2}\right)\right) \end{bmatrix}, \begin{bmatrix} :) \\ :(\\ :) \\ :(\\ \left[\left[\begin{matrix} M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \end{matrix}\right]\right] \\ :) \\ :(\\ :) \\ :(\\ :) \\ :(\end{bmatrix}$$

$$Ans3 = \begin{bmatrix} .1 = \left(\mathrm{Cos}(\alpha) = \frac{\sqrt{5}}{3}\right) & .2 = \left(\mathrm{Sin}(\beta) = -\frac{2\sqrt{14}}{9}\right) \\ .3 = \left(\mathrm{Tan}(\alpha) = \frac{2\sqrt{5}}{5}\right) & .4 = \left(\mathrm{Sin}(\beta - \alpha) = -\frac{2\sqrt{14}\sqrt{5}}{27} - \frac{10}{27}\right) \\ .5 = \left(\mathrm{Cos}(\alpha - \beta) = \frac{5\sqrt{5}}{27} - \frac{4\sqrt{14}}{27}\right) & .6 = \left(\mathrm{Tan}(\alpha + \beta) = -\frac{18\sqrt{5}}{11} + \frac{10\sqrt{14}}{11}\right) \\ .7 = \left(\mathrm{Sin}(2\beta) = -\frac{20\sqrt{14}}{81}\right) & .8 = (\mathrm{Tan}(2\alpha) = 4\sqrt{5}) \end{bmatrix}, \; Ans4 = \begin{bmatrix} .1 = \left(\mathrm{Cos}(\alpha) = -\frac{2\sqrt{2}}{3}\right) & .2 = \left(\mathrm{Sin}(\beta) = -\frac{\sqrt{39}}{8}\right) \\ .3 = \left(\mathrm{Tan}(\beta) = \frac{\sqrt{39}}{5}\right) & .4 = \left(\mathrm{Sin}(\beta - \alpha) = \frac{\sqrt{2}\sqrt{39}}{12} + \frac{5}{24}\right) \\ .5 = \left(\mathrm{Cos}(\alpha + \beta) = \frac{5\sqrt{2}}{12} + \frac{\sqrt{39}}{24}\right) & .6 = \left(\mathrm{Tan}(\alpha - \beta) = -\frac{128\sqrt{2}}{161} - \frac{45\sqrt{39}}{161}\right) \\ .7 = \left(\mathrm{Cos}(2\alpha) = \frac{7}{9}\right) & .8 = \left(\mathrm{Tan}(2\beta) = -\frac{5\sqrt{39}}{7}\right) \end{bmatrix}, \begin{bmatrix} :) \\ :(\\ M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \\ :) \\ :(\end{bmatrix}$$

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

$$Ans6 = (\mathrm{Sin}(19^o) = (\mathrm{Sqrt}(0.1060) = 0.326)), \begin{bmatrix} M \\ U \\ T \end{bmatrix}$$

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

$$Ans2 = \begin{bmatrix} .1 = \left(2\,\text{Cos}(15^o)^2 - 1 = \left(\text{Cos}(30^o) = \frac{\sqrt{3}}{2}\right)\right) & .2 = \left(\text{Cos}\left(\frac{13\pi}{30}\right)\text{Cos}\left(\frac{\pi}{15}\right) - \text{Sin}\left(\frac{13\pi}{30}\right)\text{Sin}\left(\frac{\pi}{15}\right) = \left(\text{Cos}\left(\frac{\pi}{2}\right) = 0\right)\right) \\ .3 = \left(\text{Sin}(57^o)\,\text{Cos}(12^o) - \text{Cos}(57^o)\,\text{Sin}(12^o) = \left(\text{Sin}(45^o) = \frac{\sqrt{2}}{2}\right)\right) & .4 = \left(\text{Cos}\left(\frac{\pi}{8}\right)^2 - \text{Sin}\left(\frac{\pi}{8}\right)^2 = \left(\text{Cos}\left(\frac{\pi}{4}\right) = \frac{\sqrt{2}}{2}\right)\right) \\ .5 = \left(2\,\text{Sin}(22.5^o)\,\text{Cos}(22.5^o) = \left(\text{Sin}(45^o) = \frac{\sqrt{2}}{2}\right)\right) & .6 = \left(\text{Cos}\left(\frac{7\pi}{18}\right)\text{Cos}\left(\frac{\pi}{18}\right) + \text{Sin}\left(\frac{7\pi}{18}\right)\text{Sin}\left(\frac{\pi}{18}\right) = \left(\text{Cos}\left(\frac{\pi}{3}\right) = \frac{1}{2}\right)\right) \\ .7 = \left(\left(1 - 2\,\text{Sin}\left(\frac{\pi}{12}\right)^2\right) = \left(\text{Cos}\left(\frac{\pi}{6}\right) = \frac{\sqrt{3}}{2}\right)\right) & .8 = \left(\frac{\text{Tan}(42^o) - \text{Tan}(12^o)}{1 + \text{Tan}(42^o)\,\text{Tan}(12^o)} = \left(\text{Tan}(30^o) = \frac{\sqrt{3}}{3}\right)\right) \\ .9 = \left(\frac{2\,\text{Tan}(15^o)}{1 - \text{Tan}(15^o)^2} = \left(\text{Tan}(30^o) = \frac{\sqrt{3}}{3}\right)\right) & .10 = \left(\text{Sin}(25^o)\,\text{Cos}(35^o) + \text{Cos}(25^o)\,\text{Sin}(35^o) = \left(\text{Sin}(60^o) = \frac{\sqrt{3}}{2}\right)\right) \end{bmatrix}, \quad , \begin{bmatrix} \underline{:)} \\ :(\\ \underline{:)} \\ :(\\ \left[\left[\begin{matrix} M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \end{matrix}\right]\right] \\ \underline{:)} \\ :(\\ \underline{:)} \\ :(\\ \underline{:)} \\ :(\end{bmatrix}$$

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

$$Ans5 = (\text{Cos}(24^o) = (\text{Sqrt}(0.8345) = 0.914)), \quad , \begin{bmatrix} M \\ U \\ T \end{bmatrix}$$

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

$$Ans1 = \begin{bmatrix} .1 = \left(\mathrm{Cos}\left(\frac{5\pi}{12}\right) = \frac{\sqrt{2}\sqrt{3}}{4} - \frac{\sqrt{2}}{4}\right) & .2 = \left(\mathrm{Sin}(15^o) = \frac{\sqrt{2}\sqrt{3}}{4} - \frac{\sqrt{2}}{4}\right) \\ .3 = \left(\mathrm{Tan}\left(\frac{7\pi}{12}\right) = -2-\sqrt{3}\right) & .4 = \left(\mathrm{Sin}(285^o) = -\frac{\sqrt{2}}{4} - \frac{\sqrt{2}\sqrt{3}}{4}\right) \\ .5 = \left(\mathrm{Sec}\left(\frac{11\pi}{12}\right) = -\sqrt{2}\sqrt{3}+\sqrt{2}\right) & .6 = \left(\mathrm{Tan}\left(\frac{17\pi}{12}\right) = 2+\sqrt{3}\right) \\ .7 = \left(\mathrm{Cos}((-345)^o) = \frac{\sqrt{2}}{4} + \frac{\sqrt{2}\sqrt{3}}{4}\right) & .8 = \left(\mathrm{Csc}\left(-\frac{7\pi}{12}\right) = -\sqrt{2}\sqrt{3}+\sqrt{2}\right) \end{bmatrix}, \; , \begin{bmatrix} :) \\ :(\\ M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \\ :) \\ :(\end{bmatrix}$$

$$Ans2 = \begin{bmatrix} .1 = \left(\mathrm{Sin}(40^o)\,\mathrm{Cos}(10^o) - \mathrm{Cos}(40^o)\,\mathrm{Sin}(10^o) = \left(\mathrm{Sin}(30^o) = \frac{1}{2}\right)\right) & .2 = \left(\frac{\mathrm{Tan}\left(\frac{\pi}{15}\right) + \mathrm{Tan}\left(\frac{\pi}{10}\right)}{1 - \mathrm{Tan}\left(\frac{\pi}{15}\right)\mathrm{Tan}\left(\frac{\pi}{10}\right)} = \left(\mathrm{Tan}\left(\frac{\pi}{6}\right) = \frac{\sqrt{3}}{3}\right)\right) \\ .3 = \left(\frac{\mathrm{Tan}\left(\frac{7\pi}{18}\right) - \mathrm{Tan}\left(\frac{\pi}{18}\right)}{1 + \mathrm{Tan}\left(\frac{7\pi}{18}\right)\mathrm{Tan}\left(\frac{\pi}{18}\right)} = \left(\mathrm{Tan}\left(\frac{\pi}{3}\right) = \sqrt{3}\right)\right) & .4 = \left(\mathrm{Cos}(15^o)^2 - \mathrm{Sin}(15^o)^2 = \left(\mathrm{Cos}(30^o) = \frac{\sqrt{3}}{2}\right)\right) \\ .5 = \left(\frac{2\,\mathrm{Tan}\left(\frac{\pi}{12}\right)}{1 - \mathrm{Tan}\left(\frac{\pi}{12}\right)^2} = \left(\mathrm{Tan}\left(\frac{\pi}{6}\right) = \mathrm{Tan}\left(\frac{\pi}{6}\right)\right)\right) & .6 = \left(\mathrm{Sin}(50^o)\,\mathrm{Cos}(10^o) + \mathrm{Cos}(50^o)\,\mathrm{Sin}(10^o) = \left(\mathrm{Sin}(60^o) = \frac{\sqrt{3}}{2}\right)\right) \\ .7 = \left(\mathrm{Cos}(55^o)\,\mathrm{Cos}(10^o) + \mathrm{Sin}(55^o)\,\mathrm{Sin}(10^o) = \left(\mathrm{Cos}(45^o) = \frac{\sqrt{2}}{2}\right)\right) & .8 = \left(1 - 2\,\mathrm{Sin}(22.5^o)^2 = \left(\mathrm{Cos}(45^o) = \frac{\sqrt{2}}{2}\right)\right) \\ .9 = \left(2\,\mathrm{Sin}\left(\frac{\pi}{8}\right)\mathrm{Cos}\left(\frac{\pi}{8}\right) = \left(\mathrm{Sin}\left(\frac{\pi}{4}\right) = \frac{\sqrt{2}}{2}\right)\right) & .10 = \left(2\,\mathrm{Cos}\left(\frac{\pi}{12}\right)^2 - 1 = \left(\mathrm{Cos}\left(\frac{\pi}{6}\right) = \frac{\sqrt{3}}{2}\right)\right) \end{bmatrix}, \; , \begin{bmatrix} :) \\ :(\\ :) \\ :(\\ \left[\left[\begin{matrix} M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \end{matrix}\right]\right] \\ :) \\ :(\\ :) \\ :(\\ :) \\ :(\end{bmatrix}$$

$$Ans3 = \begin{bmatrix} .1 = \left(\mathrm{Sin}(\alpha) = \frac{3}{5}\right) & .2 = \left(\mathrm{Cos}(\beta) = -\frac{\sqrt{55}}{8}\right) \\ .3 = \left(\mathrm{Tan}(\beta) = \frac{3\sqrt{55}}{55}\right) & .4 = \left(\mathrm{Sin}(\alpha-\beta) = -\frac{3\sqrt{55}}{40} + \frac{3}{10}\right) \\ .5 = \left(\mathrm{Cos}(\beta-\alpha) = -\frac{\sqrt{55}}{10} - \frac{9}{40}\right) & .6 = \left(\mathrm{Tan}(\alpha+\beta) = \frac{768}{799} + \frac{75\sqrt{55}}{799}\right) \\ .7 = \left(\mathrm{Sin}(2\alpha) = \frac{24}{25}\right) & .8 = \left(\mathrm{Tan}(2\beta) = \frac{3\sqrt{55}}{23}\right) \end{bmatrix}, \; Ans4 = \begin{bmatrix} .1 = \left(\mathrm{Sin}(\alpha) = \frac{\sqrt{21}}{5}\right) & .2 = \left(\mathrm{Cos}(\beta) = \frac{\sqrt{3}}{2}\right) \\ .3 = \left(\mathrm{Tan}(\beta) = -\frac{\sqrt{3}}{3}\right) & .4 = \left(\mathrm{Sin}(\alpha+\beta) = \frac{1}{5} + \frac{\sqrt{21}\sqrt{3}}{10}\right) \\ .5 = \left(\mathrm{Cos}(\alpha-\beta) = -\frac{\sqrt{3}}{5} - \frac{\sqrt{21}}{10}\right) & .6 = \left(\mathrm{Tan}(\beta-\alpha) = -\frac{8\sqrt{7}\sqrt{3}}{9} + \frac{25\sqrt{3}}{9}\right) \\ .7 = \left(\mathrm{Sin}(2\beta) = -\frac{\sqrt{3}}{2}\right) & .8 = \left(\mathrm{Tan}(2\alpha) = \frac{4\sqrt{21}}{17}\right) \end{bmatrix}, \; , \begin{bmatrix} :) \\ :(\\ M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \\ :) \\ :(\end{bmatrix}$$

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

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

TrigonometryExercise4 Answers for No.11967

$$Ans1 = \begin{bmatrix} .1 = \left(\mathrm{Sin}\left(\frac{7\pi}{12}\right) = \frac{\sqrt{2}}{4} + \frac{\sqrt{2}\sqrt{3}}{4}\right) & .2 = \left(\mathrm{Cos}(15^{o}) = \frac{\sqrt{2}}{4} + \frac{\sqrt{2}\sqrt{3}}{4}\right) \\ .3 = (\mathrm{Tan}(75^{o}) = 2 + \sqrt{3}) & .4 = (\mathrm{Cot}(165^{o}) = -2 - \sqrt{3}) \\ .5 = \left(\mathrm{Sec}\left(-\frac{7\pi}{12}\right) = -\sqrt{2}\sqrt{3} - \sqrt{2}\right) & .6 = \left(\mathrm{Tan}\left(-\frac{23\pi}{12}\right) = 2 - \sqrt{3}\right) \\ .7 = (\mathrm{Csc}((\text{-}165)^{o}) = -\sqrt{2}\sqrt{3} - \sqrt{2}) & .8 = \left(\mathrm{Cos}(345^{o}) = \frac{\sqrt{2}}{4} + \frac{\sqrt{2}\sqrt{3}}{4}\right) \end{bmatrix}, \quad , \begin{bmatrix} :) \\ :(\\ M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \\ :) \\ :(\end{bmatrix}$$

$$Ans2 = \begin{bmatrix} .1 = \left(1 - 2\,\mathrm{Sin}(15^{o})^2 = \left(\mathrm{Cos}(30^{o}) = \frac{\sqrt{3}}{2}\right)\right) & .2 = \left(\frac{\mathrm{Tan}(40^{o}) - \mathrm{Tan}(10^{o})}{1 + \mathrm{Tan}(40^{o})\,\mathrm{Tan}(10^{o})} = \left(\mathrm{Tan}(30^{o}) = \frac{\sqrt{3}}{3}\right)\right) \\ .3 = \left(2\,\mathrm{Cos}\left(\frac{\pi}{12}\right)^2 - 1 = \left(\mathrm{Cos}\left(\frac{\pi}{6}\right) = \frac{\sqrt{3}}{2}\right)\right) & .4 = (\mathrm{Cos}(80^{o})\,\mathrm{Cos}(10^{o}) - \mathrm{Sin}(80^{o})\,\mathrm{Sin}(10^{o}) = (\mathrm{Cos}(90^{o}) = 0)) \\ .5 = \left(\mathrm{Sin}\left(\frac{\pi}{15}\right)\mathrm{Cos}\left(\frac{\pi}{10}\right) + \mathrm{Cos}\left(\frac{\pi}{15}\right)\mathrm{Sin}\left(\frac{\pi}{10}\right) = \left(\mathrm{Sin}\left(\frac{\pi}{6}\right) = \frac{1}{2}\right)\right) & .6 = \left(\mathrm{Sin}(80^{o})\,\mathrm{Cos}(20^{o}) - \mathrm{Cos}(80^{o})\,\mathrm{Sin}(20^{o}) = \left(\mathrm{Sin}(60^{o}) = \frac{\sqrt{3}}{2}\right)\right) \\ .7 = \left(\frac{\mathrm{Tan}\left(\frac{7\pi}{36}\right) + \mathrm{Tan}\left(\frac{\pi}{18}\right)}{1 - \mathrm{Tan}\left(\frac{7\pi}{36}\right)\mathrm{Tan}\left(\frac{\pi}{18}\right)} = \left(\mathrm{Tan}\left(\frac{\pi}{4}\right) = 1\right)\right) & .8 = \left(\frac{2\,\mathrm{Tan}\left(\frac{\pi}{12}\right)}{1 - \mathrm{Tan}\left(\frac{\pi}{12}\right)^2} = \left(\mathrm{Tan}\left(\frac{\pi}{6}\right) = \mathrm{Tan}\left(\frac{\pi}{6}\right)\right)\right) \\ .9 = \left(\mathrm{Cos}\left(\frac{\pi}{8}\right)^2 - \mathrm{Sin}\left(\frac{\pi}{8}\right)^2 = \left(\mathrm{Cos}\left(\frac{\pi}{4}\right) = \frac{\sqrt{2}}{2}\right)\right) & .10 = \left(2\,\mathrm{Sin}(22.5^{o})\,\mathrm{Cos}(22.5^{o}) = \left(\mathrm{Sin}(45^{o}) = \frac{\sqrt{2}}{2}\right)\right) \end{bmatrix}, \quad , \begin{bmatrix} :) \\ :(\\ :) \\ :(\\ \begin{bmatrix}\begin{bmatrix} M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \end{bmatrix}\end{bmatrix} \\ :) \\ :(\\ :) \\ :(\\ :) \\ :(\end{bmatrix}$$

$$Ans3 = \begin{bmatrix} .1 = \left(\mathrm{Sin}(\alpha) = \frac{\sqrt{39}}{8}\right) & .2 = \left(\mathrm{Cos}(\beta) = \frac{\sqrt{55}}{8}\right) \\ .3 = \left(\mathrm{Tan}(\alpha) = \frac{\sqrt{39}}{5}\right) & .4 = \left(\mathrm{Sin}(\alpha + \beta) = \frac{\sqrt{39}\sqrt{55}}{64} - \frac{15}{64}\right) \\ .5 = \left(\mathrm{Cos}(\beta - \alpha) = \frac{5\sqrt{55}}{64} - \frac{3\sqrt{39}}{64}\right) & .6 = \left(\mathrm{Tan}(\alpha - \beta) = \frac{5\sqrt{39}}{16} + \frac{3\sqrt{55}}{16}\right) \\ .7 = \left(\mathrm{Sin}(2\alpha) = \frac{5\sqrt{39}}{32}\right) & .8 = \left(\mathrm{Tan}(2\beta) = -\frac{3\sqrt{55}}{23}\right) \end{bmatrix}, \quad , \; Ans4 = \begin{bmatrix} .1 = \left(\mathrm{Sin}(\alpha) = -\frac{\sqrt{5}}{3}\right) & .2 = \left(\mathrm{Cos}(\beta) = -\frac{\sqrt{55}}{8}\right) \\ .3 = \left(\mathrm{Tan}(\alpha) = \frac{\sqrt{5}}{2}\right) & .4 = \left(\mathrm{Sin}(\beta - \alpha) = -\frac{1}{4} - \frac{\sqrt{5}\sqrt{55}}{24}\right) \\ .5 = \left(\mathrm{Cos}(\alpha - \beta) = \frac{\sqrt{55}}{12} - \frac{\sqrt{5}}{8}\right) & .6 = \left(\mathrm{Tan}(\alpha + \beta) = \frac{128\sqrt{5}}{175} - \frac{27\sqrt{11}\sqrt{5}}{175}\right) \\ .7 = \left(\mathrm{Sin}(2\beta) = -\frac{3\sqrt{55}}{32}\right) & .8 = (\mathrm{Tan}(2\alpha) = -4\sqrt{5}) \end{bmatrix}, \quad , \begin{bmatrix} :) \\ :(\\ M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \\ :) \\ :(\end{bmatrix}$$

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

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

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$$Ans1 = \begin{bmatrix} .1 = \left(\mathrm{Sin}\left(\frac{\pi}{12}\right) = \frac{\sqrt{2}\sqrt{3}}{4} - \frac{\sqrt{2}}{4}\right) & .2 = \left(\mathrm{Cos}(105^o) = \frac{\sqrt{2}}{4} - \frac{\sqrt{2}\sqrt{3}}{4}\right) \\ .3 = (\mathrm{Tan}(75^o) = 2 + \sqrt{3}) & .4 = (\mathrm{Sec}(195^o) = -\sqrt{2}\sqrt{3} + \sqrt{2}) \\ .5 = \left(\mathrm{Csc}\left(\frac{11\pi}{12}\right) = \sqrt{2}\sqrt{3} + \sqrt{2}\right) & .6 = \left(\mathrm{Cos}\left(-\frac{17\pi}{12}\right) = \frac{\sqrt{2}}{4} - \frac{\sqrt{2}\sqrt{3}}{4}\right) \\ .7 = \left(\mathrm{Sin}(285^o) = -\frac{\sqrt{2}}{4} - \frac{\sqrt{2}\sqrt{3}}{4}\right) & .8 = (\mathrm{Cot}((-285)^o) = 2 - \sqrt{3}) \end{bmatrix}, \; , \begin{bmatrix} :) \\ :(\\ M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \\ :) \\ :(\end{bmatrix}$$

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

$$Ans3 = \begin{bmatrix} .1 = \left(\mathrm{Sin}(\alpha) = \frac{\sqrt{65}}{9}\right) & .2 = \left(\mathrm{Cos}(\beta) = -\frac{\sqrt{39}}{8}\right) \\ .3 = \left(\mathrm{Tan}(\beta) = \frac{5\sqrt{39}}{39}\right) & .4 = \left(\mathrm{Sin}(\beta - \alpha) = -\frac{5}{18} + \frac{\sqrt{65}\sqrt{39}}{72}\right) \\ .5 = \left(\mathrm{Cos}(\alpha + \beta) = -\frac{\sqrt{39}}{18} + \frac{5\sqrt{65}}{72}\right) & .6 = \left(\mathrm{Tan}(\alpha - \beta) = -\frac{256\sqrt{13}\sqrt{5}}{1001} + \frac{405\sqrt{3}\sqrt{13}}{1001}\right) \\ .7 = \left(\mathrm{Cos}(2\alpha) = \frac{-49}{81}\right) & .8 = \left(\mathrm{Tan}(2\beta) = \frac{5\sqrt{39}}{7}\right) \end{bmatrix}, \; , \; Ans4 = \begin{bmatrix} .1 = \left(\mathrm{Cos}(\alpha) = -\frac{\sqrt{3}}{2}\right) & .2 = \left(\mathrm{Sin}(\beta) = -\frac{\sqrt{5}}{3}\right) \\ .3 = \left(\mathrm{Tan}(\beta) = -\frac{\sqrt{5}}{2}\right) & .4 = \left(\mathrm{Sin}(\alpha + \beta) = \frac{1}{3} + \frac{\sqrt{5}\sqrt{3}}{6}\right) \\ .5 = \left(\mathrm{Cos}(\beta - \alpha) = -\frac{\sqrt{3}}{3} - \frac{\sqrt{5}}{6}\right) & .6 = \left(\mathrm{Tan}(\alpha - \beta) = -\frac{9\sqrt{3}}{7} + \frac{8\sqrt{5}}{7}\right) \\ .7 = \left(\mathrm{Sin}(2\alpha) = -\frac{\sqrt{3}}{2}\right) & .8 = (\mathrm{Tan}(2\beta) = 4\sqrt{5}) \end{bmatrix}, \; , \begin{bmatrix} :) \\ :(\\ M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \\ :) \\ :(\end{bmatrix}$$

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

$$Ans6 = (\mathrm{Sin}(16^o) = (\mathrm{Sqrt}(0.0760) = 0.276)), \; , \begin{bmatrix} M \\ U \\ T \end{bmatrix}$$

TrigonometryExercise4 Answers for No.13093

$$Ans1 = \begin{bmatrix} .1 = \left(\mathrm{Cos}\left(\frac{5\pi}{12}\right) = \frac{\sqrt{2}\sqrt{3}}{4} - \frac{\sqrt{2}}{4}\right) & .2 = \left(\mathrm{Sin}(105^o) = \frac{\sqrt{2}}{4} + \frac{\sqrt{2}\sqrt{3}}{4}\right) \\ .3 = (\mathrm{Tan}(15^o) = 2 - \sqrt{3}) & .4 = \left(\mathrm{Sin}((-345)^o) = \frac{\sqrt{2}\sqrt{3}}{4} - \frac{\sqrt{2}}{4}\right) \\ .5 = \left(\mathrm{Cos}\left(\frac{23\pi}{12}\right) = \frac{\sqrt{2}}{4} + \frac{\sqrt{2}\sqrt{3}}{4}\right) & .6 = (\mathrm{Sec}(195^o) = -\sqrt{2}\sqrt{3} + \sqrt{2}) \\ .7 = \left(\mathrm{Csc}\left(-\frac{19\pi}{12}\right) = \sqrt{2}\sqrt{3} - \sqrt{2}\right) & .8 = \left(\mathrm{Tan}\left(\frac{19\pi}{12}\right) = -2 - \sqrt{3}\right) \end{bmatrix}, \; , \begin{bmatrix} :) \\ :(\\ M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \\ :) \\ :(\end{bmatrix}$$

$$Ans2 = \begin{bmatrix} .1 = \left(2\,\mathrm{Sin}\left(\frac{\pi}{8}\right)\mathrm{Cos}\left(\frac{\pi}{8}\right) = \left(\mathrm{Sin}\left(\frac{\pi}{4}\right) = \frac{\sqrt{2}}{2}\right)\right) & .2 = \left(\mathrm{Sin}(18^o)\,\mathrm{Cos}(12^o) + \mathrm{Cos}(18^o)\,\mathrm{Sin}(12^o) = \left(\mathrm{Sin}(30^o) = \frac{1}{2}\right)\right) \\ .3 = \left(2\,\mathrm{Cos}\left(\frac{\pi}{12}\right)^2 - 1 = \left(\mathrm{Cos}\left(\frac{\pi}{6}\right) = \frac{\sqrt{3}}{2}\right)\right) & .4 = \left(\frac{\mathrm{Tan}(25^o) + \mathrm{Tan}(20^o)}{1 - \mathrm{Tan}(25^o)\,\mathrm{Tan}(20^o)} = (\mathrm{Tan}(45^o) = 1)\right) \\ .5 = \left(\frac{\mathrm{Tan}\left(\frac{7\pi}{36}\right) - \mathrm{Tan}\left(\frac{\pi}{36}\right)}{1 + \mathrm{Tan}\left(\frac{7\pi}{36}\right)\mathrm{Tan}\left(\frac{\pi}{36}\right)} = \left(\mathrm{Tan}\left(\frac{\pi}{6}\right) = \frac{\sqrt{3}}{3}\right)\right) & .6 = \left(\mathrm{Cos}\left(\frac{\pi}{18}\right)\mathrm{Cos}\left(\frac{5\pi}{18}\right) - \mathrm{Sin}\left(\frac{\pi}{18}\right)\mathrm{Sin}\left(\frac{5\pi}{18}\right) = \left(\mathrm{Cos}\left(\frac{\pi}{3}\right) = \frac{1}{2}\right)\right) \\ .7 = \left(\mathrm{Cos}(72^o)\,\mathrm{Cos}(12^o) + \mathrm{Sin}(72^o)\,\mathrm{Sin}(12^o) = \left(\mathrm{Cos}(60^o) = \frac{1}{2}\right)\right) & .8 = \left(\frac{2\,\mathrm{Tan}(22.5^o)}{1 - \mathrm{Tan}(22.5^o)^2} = (\mathrm{Tan}(45^o) = 1)\right) \\ .9 = \left(1 - 2\,\mathrm{Sin}(22.5^o)^2 = \left(\mathrm{Cos}(45^o) = \frac{\sqrt{2}}{2}\right)\right) & .10 = \left(\mathrm{Cos}(15^o)^2 - \mathrm{Sin}(15^o)^2 = \left(\mathrm{Cos}(30^o) = \frac{\sqrt{3}}{2}\right)\right) \end{bmatrix}, \; , \begin{bmatrix} :) \\ :(\\ :) \\ :(\\ \left[\left[\begin{matrix} M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \end{matrix}\right]\right] \\ :) \\ :(\\ :) \\ :(\\ :) \\ :(\end{bmatrix}$$

$$Ans3 = \begin{bmatrix} .1 = \left(\mathrm{Sin}(\alpha) = \frac{\sqrt{5}}{3}\right) & .2 = \left(\mathrm{Cos}(\beta) = \frac{4}{5}\right) \\ .3 = \left(\mathrm{Tan}(\beta) = \frac{-3}{4}\right) & .4 = \left(\mathrm{Sin}(\beta - \alpha) = -\frac{2}{5} - \frac{4\sqrt{5}}{15}\right) \\ .5 = \left(\mathrm{Cos}(\alpha + \beta) = \frac{8}{15} + \frac{\sqrt{5}}{5}\right) & .6 = \left(\mathrm{Tan}(\alpha - \beta) = \frac{50\sqrt{5}}{19} + \frac{108}{19}\right) \\ .7 = \left(\mathrm{Cos}(2\beta) = \frac{7}{25}\right) & .8 = (\mathrm{Tan}(2\alpha) = -4\sqrt{5}) \end{bmatrix}, \; , \; Ans4 = \begin{bmatrix} .1 = \left(\mathrm{Sin}(\alpha) = -\frac{\sqrt{7}}{4}\right) & .2 = \left(\mathrm{Cos}(\beta) = -\frac{2\sqrt{14}}{9}\right) \\ .3 = \left(\mathrm{Tan}(\alpha) = \frac{\sqrt{7}}{3}\right) & .4 = \left(\mathrm{Sin}(\alpha + \beta) = \frac{\sqrt{7}\sqrt{14}}{18} - \frac{5}{12}\right) \\ .5 = \left(\mathrm{Cos}(\alpha - \beta) = \frac{\sqrt{14}}{6} - \frac{5\sqrt{7}}{36}\right) & .6 = \left(\mathrm{Tan}(\beta - \alpha) = -\frac{160\sqrt{2}\sqrt{7}}{329} - \frac{243\sqrt{7}}{329}\right) \\ .7 = \left(\mathrm{Cos}(2\alpha) = \frac{1}{8}\right) & .8 = \left(\mathrm{Tan}(2\beta) = -\frac{20\sqrt{14}}{31}\right) \end{bmatrix}, \; , \begin{bmatrix} :) \\ :(\\ M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \\ :) \\ :(\end{bmatrix}$$

$$Ans5 = (\mathrm{Sin}(38^o) = (\mathrm{Sqrt}(0.3790) = 0.616)), \; , \begin{bmatrix} M \\ U \\ T \end{bmatrix}$$

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

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$$Ans1 = \begin{bmatrix} .1 = \left(\mathrm{Sin}(75^o) = \frac{\sqrt{2}}{4} + \frac{\sqrt{2}\sqrt{3}}{4}\right) & .2 = \left(\mathrm{Cos}\left(\frac{\pi}{12}\right) = \frac{\sqrt{2}}{4} + \frac{\sqrt{2}\sqrt{3}}{4}\right) \\ .3 = \left(\mathrm{Tan}\left(\frac{7\pi}{12}\right) = -2 - \sqrt{3}\right) & .4 = (\mathrm{Cot}((-255)^o) = -2 + \sqrt{3}) \\ .5 = \left(\mathrm{Sec}\left(-\frac{13\pi}{12}\right) = -\sqrt{2}\sqrt{3} + \sqrt{2}\right) & .6 = (\mathrm{Csc}(195^o) = -\sqrt{2}\sqrt{3} - \sqrt{2}) \\ .7 = \left(\mathrm{Cos}\left(\frac{19\pi}{12}\right) = \frac{\sqrt{2}\sqrt{3}}{4} - \frac{\sqrt{2}}{4}\right) & .8 = \left(\mathrm{Sin}\left(\frac{11\pi}{12}\right) = \frac{\sqrt{2}\sqrt{3}}{4} - \frac{\sqrt{2}}{4}\right) \end{bmatrix}, \begin{bmatrix} :) \\ :(\\ M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \\ :) \\ :(\end{bmatrix}$$

$$Ans2 = \begin{bmatrix} .1 = \left(\mathrm{Cos}\left(\frac{\pi}{12}\right)^2 - \mathrm{Sin}\left(\frac{\pi}{12}\right)^2 = \left(\mathrm{Cos}\left(\frac{\pi}{6}\right) = \frac{\sqrt{3}}{2}\right)\right) & .2 = \left(\frac{\mathrm{Tan}(80^o) - \mathrm{Tan}(20^o)}{1 + \mathrm{Tan}(80^o)\,\mathrm{Tan}(20^o)} = (\mathrm{Tan}(60^o) = \sqrt{3})\right) \\ .3 = \left(2\,\mathrm{Sin}(15^o)\,\mathrm{Cos}(15^o) = \left(\mathrm{Sin}(30^o) = \frac{1}{2}\right)\right) & .4 = \left(2\,\mathrm{Cos}\left(\frac{\pi}{8}\right)^2 - 1 = \left(\mathrm{Cos}\left(\frac{\pi}{4}\right) = \frac{\sqrt{2}}{2}\right)\right) \\ .5 = \left(1 - 2\,\mathrm{Sin}(22.5^o)^2 = \left(\mathrm{Cos}(45^o) = \frac{\sqrt{2}}{2}\right)\right) & .6 = \left(\mathrm{Sin}(33^o)\,\mathrm{Cos}(12^o) + \mathrm{Cos}(33^o)\,\mathrm{Sin}(12^o) = \left(\mathrm{Sin}(45^o) = \frac{\sqrt{2}}{2}\right)\right) \\ .7 = \left(\mathrm{Cos}\left(\frac{\pi}{12}\right)\mathrm{Cos}\left(\frac{5\pi}{12}\right) - \mathrm{Sin}\left(\frac{\pi}{12}\right)\mathrm{Sin}\left(\frac{5\pi}{12}\right) = \left(\mathrm{Cos}\left(\frac{\pi}{2}\right) = 0\right)\right) & .8 = \left(\mathrm{Sin}(35^o)\,\mathrm{Cos}(5^o) - \mathrm{Cos}(35^o)\,\mathrm{Sin}(5^o) = \left(\mathrm{Sin}(30^o) = \frac{1}{2}\right)\right) \\ .9 = \left(\frac{\mathrm{Tan}\left(\frac{5\pi}{36}\right) + \mathrm{Tan}\left(\frac{\pi}{36}\right)}{1 - \mathrm{Tan}\left(\frac{5\pi}{36}\right)\mathrm{Tan}\left(\frac{\pi}{36}\right)} = \left(\mathrm{Tan}\left(\frac{\pi}{6}\right) = \frac{\sqrt{3}}{3}\right)\right) & .10 = \left(\frac{2\,\mathrm{Tan}(15^o)}{1 - \mathrm{Tan}(15^o)^2} = \left(\mathrm{Tan}(30^o) = \frac{\sqrt{3}}{3}\right)\right) \end{bmatrix}, \begin{bmatrix} :) \\ :(\\ :) \\ :(\\ \begin{bmatrix}\begin{bmatrix} M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \end{bmatrix}\end{bmatrix} \\ :) \\ :(\\ :) \\ :(\\ :) \\ :(\end{bmatrix}$$

$$Ans3 = \begin{bmatrix} .1 = \left(\mathrm{Sin}(\alpha) = \frac{\sqrt{11}}{6}\right) & .2 = \left(\mathrm{Cos}(\beta) = \frac{2\sqrt{2}}{3}\right) \\ .3 = \left(\mathrm{Tan}(\beta) = -\frac{\sqrt{2}}{4}\right) & .4 = \left(\mathrm{Sin}(\beta - \alpha) = -\frac{5}{18} - \frac{\sqrt{11}\sqrt{2}}{9}\right) \\ .5 = \left(\mathrm{Cos}(\alpha - \beta) = \frac{5\sqrt{2}}{9} - \frac{\sqrt{11}}{18}\right) & .6 = \left(\mathrm{Tan}(\alpha + \beta) = \frac{5\sqrt{11}}{21} - \frac{8\sqrt{2}}{21}\right) \\ .7 = \left(\mathrm{Sin}(2\beta) = -\frac{4\sqrt{2}}{9}\right) & .8 = \left(\mathrm{Tan}(2\alpha) = \frac{5\sqrt{11}}{7}\right) \end{bmatrix}, \quad Ans4 = \begin{bmatrix} .1 = \left(\mathrm{Sin}(\alpha) = \frac{\sqrt{39}}{8}\right) & .2 = \left(\mathrm{Cos}(\beta) = -\frac{\sqrt{33}}{7}\right) \\ .3 = \left(\mathrm{Tan}(\alpha) = -\frac{\sqrt{39}}{5}\right) & .4 = \left(\mathrm{Sin}(\alpha + \beta) = -\frac{\sqrt{39}\sqrt{33}}{56} + \frac{5}{14}\right) \\ .5 = \left(\mathrm{Cos}(\alpha - \beta) = \frac{5\sqrt{33}}{56} - \frac{\sqrt{39}}{14}\right) & .6 = \left(\mathrm{Tan}(\beta - \alpha) = \frac{256\sqrt{3}\sqrt{11}}{201} + \frac{245\sqrt{3}\sqrt{13}}{201}\right) \\ .7 = \left(\mathrm{Cos}(2\alpha) = \frac{-7}{32}\right) & .8 = \left(\mathrm{Tan}(2\beta) = \frac{8\sqrt{33}}{17}\right) \end{bmatrix}, \begin{bmatrix} :) \\ :(\\ M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \\ :) \\ :(\end{bmatrix}$$

$$Ans5 = (\mathrm{Sin}(39^o) = (\mathrm{Sqrt}(0.3960) = 0.629)), \begin{bmatrix} M \\ U \\ T \end{bmatrix}$$

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

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

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

$$Ans3 = \begin{bmatrix} .1 = \left(\text{Cos}(\alpha) = \frac{\sqrt{15}}{4}\right) & .2 = \left(\text{Sin}(\beta) = -\frac{\sqrt{5}}{3}\right) \\ .3 = \left(\text{Tan}(\alpha) = \frac{\sqrt{15}}{15}\right) & .4 = \left(\text{Sin}(\beta - \alpha) = -\frac{\sqrt{15}\sqrt{5}}{12} - \frac{1}{6}\right) \\ .5 = \left(\text{Cos}(\alpha - \beta) = \frac{\sqrt{15}}{6} - \frac{\sqrt{5}}{12}\right) & .6 = \left(\text{Tan}(\alpha + \beta) = \frac{9\sqrt{5}\sqrt{3}}{55} - \frac{32\sqrt{5}}{55}\right) \\ .7 = \left(\text{Sin}(2\beta) = -\frac{4\sqrt{5}}{9}\right) & .8 = \left(\text{Tan}(2\alpha) = \frac{\sqrt{15}}{7}\right) \end{bmatrix}, \; Ans4 = \begin{bmatrix} .1 = \left(\text{Sin}(\alpha) = \frac{\sqrt{39}}{8}\right) & .2 = \left(\text{Cos}(\beta) = -\frac{\sqrt{3}}{2}\right) \\ .3 = \left(\text{Tan}(\beta) = \frac{\sqrt{3}}{3}\right) & .4 = \left(\text{Sin}(\beta - \alpha) = \frac{\sqrt{3}\sqrt{39}}{16} + \frac{5}{16}\right) \\ .5 = \left(\text{Cos}(\alpha + \beta) = \frac{5\sqrt{3}}{16} + \frac{\sqrt{39}}{16}\right) & .6 = \left(\text{Tan}(\alpha - \beta) = -\frac{5\sqrt{3}\sqrt{13}}{9} - \frac{16\sqrt{3}}{9}\right) \\ .7 = \left(\text{Sin}(2\beta) = \frac{\sqrt{3}}{2}\right) & .8 = \left(\text{Tan}(2\alpha) = \frac{5\sqrt{39}}{7}\right) \end{bmatrix}, \begin{bmatrix} :) \\ :(\\ M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \\ :) \\ :(\end{bmatrix}$$

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

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

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

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

$$Ans3 = \begin{bmatrix} .1 = \left(\mathrm{Sin}(\alpha) = \frac{3\sqrt{5}}{7}\right) & .2 = \left(\mathrm{Cos}(\beta) = \frac{-4}{5}\right) \\ .3 = \left(\mathrm{Tan}(\alpha) = \frac{3\sqrt{5}}{2}\right) & .4 = \left(\mathrm{Sin}(\alpha - \beta) = -\frac{12\sqrt{5}}{35} - \frac{6}{35}\right) \\ .5 = \left(\mathrm{Cos}(\beta - \alpha) = -\frac{8}{35} + \frac{9\sqrt{5}}{35}\right) & .6 = \left(\mathrm{Tan}(\alpha + \beta) = -\frac{150\sqrt{5}}{341} + \frac{588}{341}\right) \\ .7 = \left(\mathrm{Cos}(2\beta) = \frac{7}{25}\right) & .8 = \left(\mathrm{Tan}(2\alpha) = -\frac{12\sqrt{5}}{41}\right) \end{bmatrix}, \ , Ans4 = \begin{bmatrix} .1 = \left(\mathrm{Sin}(\alpha) = -\frac{\sqrt{39}}{8}\right) & .2 = \left(\mathrm{Cos}(\beta) = -\frac{2\sqrt{6}}{7}\right) \\ .3 = \left(\mathrm{Tan}(\alpha) = -\frac{\sqrt{39}}{5}\right) & .4 = \left(\mathrm{Sin}(\alpha - \beta) = \frac{\sqrt{39}\sqrt{6}}{28} + \frac{25}{56}\right) \\ .5 = \left(\mathrm{Cos}(\beta - \alpha) = -\frac{5\sqrt{6}}{28} + \frac{5\sqrt{39}}{56}\right) & .6 = \left(\mathrm{Tan}(\alpha + \beta) = \frac{49\sqrt{3}\sqrt{13}}{75} - \frac{128\sqrt{2}\sqrt{3}}{75}\right) \\ .7 = \left(\mathrm{Sin}(2\alpha) = -\frac{5\sqrt{39}}{32}\right) & .8 = (\mathrm{Tan}(2\beta) = -20\sqrt{6}) \end{bmatrix}, \ , \begin{bmatrix} \frac{:)}{:(} \\ M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \\ \frac{:)}{:(} \end{bmatrix}$$

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

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

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$$Ans1 = \begin{bmatrix} .1 = \left(\mathrm{Sin}\left(\frac{5\pi}{12}\right) = \frac{\sqrt{2}}{4} + \frac{\sqrt{2}\sqrt{3}}{4}\right) & .2 = \left(\mathrm{Cos}(15^{o}) = \frac{\sqrt{2}}{4} + \frac{\sqrt{2}\sqrt{3}}{4}\right) \\ .3 = (\mathrm{Tan}(105^{o}) = -2 - \sqrt{3}) & .4 = (\mathrm{Sec}((-345)^{o}) = \sqrt{2}\sqrt{3} - \sqrt{2}) \\ .5 = \left(\mathrm{Csc}\left(-\frac{13\pi}{12}\right) = \sqrt{2}\sqrt{3} + \sqrt{2}\right) & .6 = \left(\mathrm{Sin}(195^{o}) = \frac{\sqrt{2}}{4} - \frac{\sqrt{2}\sqrt{3}}{4}\right) \\ .7 = \left(\mathrm{Cot}\left(\frac{19\pi}{12}\right) = -2 + \sqrt{3}\right) & .8 = (\mathrm{Tan}((-105)^{o}) = 2 + \sqrt{3}) \end{bmatrix}, \begin{bmatrix} :) \\ :(\\ M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \\ :) \\ :(\end{bmatrix}$$

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

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

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

$$Ans6 = (\mathrm{Sin}(37^{o}) = (\mathrm{Sqrt}(0.3620) = 0.602)), \quad \begin{bmatrix} M \\ U \\ T \end{bmatrix}$$

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

$$Ans2 = \begin{bmatrix} .1 = \left(\frac{2\,Tan(22.5^o)}{1 - Tan(22.5^o)^2} = (Tan(45^o) = 1)\right) & .2 = \left(Cos\left(\frac{19\pi}{60}\right)Cos\left(\frac{\pi}{15}\right) + Sin\left(\frac{19\pi}{60}\right)Sin\left(\frac{\pi}{15}\right) = \left(Cos\left(\frac{\pi}{4}\right) = \frac{\sqrt{2}}{2}\right)\right) \\ .3 = \left(\frac{Tan(20^o) + Tan(10^o)}{1 - Tan(20^o)\,Tan(10^o)} = \left(Tan(30^o) = \frac{\sqrt{3}}{3}\right)\right) & .4 = \left(2\,Cos(22.5^o)^2 - 1 = \left(Cos(45^o) = \frac{\sqrt{2}}{2}\right)\right) \\ .5 = \left(Cos(35^o)\,Cos(10^o) - Sin(35^o)\,Sin(10^o) = \left(Cos(45^o) = \frac{\sqrt{2}}{2}\right)\right) & .6 = \left(Cos\left(\frac{\pi}{12}\right)^2 - Sin\left(\frac{\pi}{12}\right)^2 = \left(Cos\left(\frac{\pi}{6}\right) = \frac{\sqrt{3}}{2}\right)\right) \\ .7 = \left(Sin\left(\frac{\pi}{15}\right)Cos\left(\frac{4\pi}{15}\right) + Cos\left(\frac{\pi}{15}\right)Sin\left(\frac{4\pi}{15}\right) = \left(Sin\left(\frac{\pi}{3}\right) = \frac{\sqrt{3}}{2}\right)\right) & .8 = \left(2\,Sin(15^o)\,Cos(15^o) = \left(Sin(30^o) = \frac{1}{2}\right)\right) \\ .9 = \left(1 - 2\,Sin\left(\frac{\pi}{8}\right)^2 = \left(Cos\left(\frac{\pi}{4}\right) = \frac{\sqrt{2}}{2}\right)\right) & .10 = \left(\frac{Tan(40^o) - Tan(10^o)}{1 + Tan(40^o)\,Tan(10^o)} = \left(Tan(30^o) = \frac{\sqrt{3}}{3}\right)\right) \end{bmatrix}, \begin{bmatrix} :) \\ :(\\ :) \\ :(\\ \left[\left[\begin{matrix} M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \end{matrix}\right]\right] \\ :) \\ :(\\ :) \\ :(\\ :) \\ :(\end{bmatrix}$$

$$Ans3 = \begin{bmatrix} .1 = \left(Cos(\alpha) = \frac{\sqrt{35}}{6}\right) & .2 = \left(Sin(\beta) = \frac{\sqrt{7}}{4}\right) \\ .3 = \left(Tan(\alpha) = \frac{\sqrt{35}}{35}\right) & .4 = \left(Sin(\alpha - \beta) = -\frac{1}{8} - \frac{\sqrt{35}\sqrt{7}}{24}\right) \\ .5 = \left(Cos(\alpha + \beta) = -\frac{\sqrt{35}}{8} - \frac{\sqrt{7}}{24}\right) & .6 = \left(Tan(\beta - \alpha) = -\frac{27\sqrt{7}}{77} - \frac{4\sqrt{5}\sqrt{7}}{77}\right) \\ .7 = \left(Cos(2\alpha) = \frac{17}{18}\right) & .8 = (Tan(2\beta) = -3\sqrt{7}) \end{bmatrix}, \quad Ans4 = \begin{bmatrix} .1 = \left(Cos(\alpha) = -\frac{\sqrt{21}}{5}\right) & .2 = \left(Sin(\beta) = \frac{-4}{5}\right) \\ .3 = \left(Tan(\beta) = \frac{-4}{3}\right) & .4 = \left(Sin(\alpha - \beta) = -\frac{6}{25} - \frac{4\sqrt{21}}{25}\right) \\ .5 = \left(Cos(\alpha + \beta) = -\frac{3\sqrt{21}}{25} - \frac{8}{25}\right) & .6 = \left(Tan(\beta - \alpha) = -\frac{12}{5} - \frac{2\sqrt{21}}{5}\right) \\ .7 = \left(Sin(2\beta) = \frac{-24}{25}\right) & .8 = \left(Tan(2\alpha) = \frac{4\sqrt{21}}{17}\right) \end{bmatrix}, \begin{bmatrix} :) \\ :(\\ M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \\ :) \\ :(\end{bmatrix}$$

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

$$Ans6 = (Sin(13^o) = (Sqrt(0.0505) = 0.225)), \quad \begin{bmatrix} M \\ U \\ T \end{bmatrix}$$

TrigonometryExercise4 Answers for No.13716

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

$$Ans2 = \begin{bmatrix} .1 = \left(2\,\mathrm{Cos}\left(\frac{\pi}{8}\right)^2 - 1 = \left(\mathrm{Cos}\left(\frac{\pi}{4}\right) = \frac{\sqrt{2}}{2}\right)\right) & .2 = \left(\frac{\mathrm{Tan}(35^o) + \mathrm{Tan}(25^o)}{1 - \mathrm{Tan}(35^o)\,\mathrm{Tan}(25^o)} = (\mathrm{Tan}(60^o) = \sqrt{3})\right) \\ .3 = \left(\frac{2\,\mathrm{Tan}(22.5^o)}{1 - \mathrm{Tan}(22.5^o)^2} = (\mathrm{Tan}(45^o) = 1)\right) & .4 = \left(2\,\mathrm{Sin}(22.5^o)\,\mathrm{Cos}(22.5^o) = \left(\mathrm{Sin}(45^o) = \frac{\sqrt{2}}{2}\right)\right) \\ .5 = \left(\mathrm{Sin}\left(\frac{11\pi}{36}\right)\mathrm{Cos}\left(\frac{\pi}{18}\right) - \mathrm{Cos}\left(\frac{11\pi}{36}\right)\mathrm{Sin}\left(\frac{\pi}{18}\right) = \left(\mathrm{Sin}\left(\frac{\pi}{4}\right) = \frac{\sqrt{2}}{2}\right)\right) & .6 = \left(\mathrm{Cos}\left(\frac{\pi}{12}\right)^2 - \mathrm{Sin}\left(\frac{\pi}{12}\right)^2 = \left(\mathrm{Cos}\left(\frac{\pi}{6}\right) = \frac{\sqrt{3}}{2}\right)\right) \\ .7 = \left(\mathrm{Sin}\left(\frac{\pi}{15}\right)\mathrm{Cos}\left(\frac{11\pi}{60}\right) + \mathrm{Cos}\left(\frac{\pi}{15}\right)\mathrm{Sin}\left(\frac{11\pi}{60}\right) = \left(\mathrm{Sin}\left(\frac{\pi}{4}\right) = \frac{\sqrt{2}}{2}\right)\right) & .8 = \left(\frac{\mathrm{Tan}\left(\frac{7\pi}{30}\right) - \mathrm{Tan}\left(\frac{\pi}{15}\right)}{1 + \mathrm{Tan}\left(\frac{7\pi}{30}\right)\mathrm{Tan}\left(\frac{\pi}{15}\right)} = \left(\mathrm{Tan}\left(\frac{\pi}{6}\right) = \frac{\sqrt{3}}{3}\right)\right) \\ .9 = (\mathrm{Cos}(100^o)\,\mathrm{Cos}(10^o) + \mathrm{Sin}(100^o)\,\mathrm{Sin}(10^o) = (\mathrm{Cos}(90^o) = 0)) & .10 = \left(1 - 2\,\mathrm{Sin}(15^o)^2 = \left(\mathrm{Cos}(30^o) = \frac{\sqrt{3}}{2}\right)\right) \end{bmatrix}, \begin{bmatrix} :) \\ :(\\ :) \\ :(\\ \begin{bmatrix}\begin{bmatrix} M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \end{bmatrix}\end{bmatrix} \\ :) \\ :(\\ :) \\ :(\\ :) \\ :(\end{bmatrix}$$

$$Ans3 = \begin{bmatrix} .1 = \left(\mathrm{Cos}(\alpha) = \frac{\sqrt{3}}{2}\right) & .2 = \left(\mathrm{Sin}(\beta) = -\frac{2\sqrt{10}}{7}\right) \\ .3 = \left(\mathrm{Tan}(\beta) = \frac{2\sqrt{10}}{3}\right) & .4 = \left(\mathrm{Sin}(\alpha - \beta) = -\frac{3}{14} + \frac{\sqrt{3}\sqrt{10}}{7}\right) \\ .5 = \left(\mathrm{Cos}(\alpha + \beta) = -\frac{3\sqrt{3}}{14} + \frac{\sqrt{10}}{7}\right) & .6 = \left(\mathrm{Tan}(\beta - \alpha) = -\frac{24\sqrt{10}}{13} + \frac{49\sqrt{3}}{13}\right) \\ .7 = \left(\mathrm{Cos}(2\beta) = \frac{-31}{49}\right) & .8 = (\mathrm{Tan}(2\alpha) = \sqrt{3}) \end{bmatrix}, \quad Ans4 = \begin{bmatrix} .1 = \left(\mathrm{Sin}(\alpha) = -\frac{3\sqrt{5}}{7}\right) & .2 = \left(\mathrm{Cos}(\beta) = -\frac{2\sqrt{2}}{3}\right) \\ .3 = \left(\mathrm{Tan}(\alpha) = -\frac{3\sqrt{5}}{2}\right) & .4 = \left(\mathrm{Sin}(\beta - \alpha) = \frac{2}{21} - \frac{2\sqrt{2}\sqrt{5}}{7}\right) \\ .5 = \left(\mathrm{Cos}(\alpha - \beta) = -\frac{4\sqrt{2}}{21} - \frac{\sqrt{5}}{7}\right) & .6 = \left(\mathrm{Tan}(\alpha + \beta) = \frac{54\sqrt{5}}{13} + \frac{98\sqrt{2}}{13}\right) \\ .7 = \left(\mathrm{Sin}(2\alpha) = -\frac{12\sqrt{5}}{49}\right) & .8 = \left(\mathrm{Tan}(2\beta) = -\frac{4\sqrt{2}}{7}\right) \end{bmatrix}, \begin{bmatrix} :) \\ :(\\ M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \\ :) \\ :(\end{bmatrix}$$

$$Ans5 = (\mathrm{Sin}(39^o) = (\mathrm{Sqrt}(0.3960) = 0.629)), \begin{bmatrix} M \\ U \\ T \end{bmatrix}$$

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

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TrigonometryExercise4 Answers for No.13720

$$Ans1 = \begin{bmatrix} .1 = \left(\mathrm{Cos}(15^{o}) = \frac{\sqrt{2}}{4} + \frac{\sqrt{2}\sqrt{3}}{4}\right) & .2 = \left(\mathrm{Sin}\left(\frac{5\pi}{12}\right) = \frac{\sqrt{2}}{4} + \frac{\sqrt{2}\sqrt{3}}{4}\right) \\ .3 = (\mathrm{Tan}(105^{o}) = -2 - \sqrt{3}) & .4 = (\mathrm{Csc}((-285)^{o}) = \sqrt{2}\sqrt{3} - \sqrt{2}) \\ .5 = \left(\mathrm{Sin}\left(\frac{19\pi}{12}\right) = -\frac{\sqrt{2}}{4} - \frac{\sqrt{2}\sqrt{3}}{4}\right) & .6 = \left(\mathrm{Cot}\left(-\frac{17\pi}{12}\right) = -2 + \sqrt{3}\right) \\ .7 = (\mathrm{Tan}(195^{o}) = 2 - \sqrt{3}) & .8 = \left(\mathrm{Sec}\left(-\frac{5\pi}{12}\right) = \sqrt{2}\sqrt{3} + \sqrt{2}\right) \end{bmatrix}, \ , \begin{bmatrix} :) \\ :(\\ M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \\ :) \\ :(\end{bmatrix}$$

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

$$Ans3 = \begin{bmatrix} .1 = \left(\mathrm{Sin}(\alpha) = \frac{\sqrt{7}}{4}\right) & .2 = \left(\mathrm{Cos}(\beta) = -\frac{\sqrt{55}}{8}\right) \\ .3 = \left(\mathrm{Tan}(\beta) = \frac{3\sqrt{55}}{55}\right) & .4 = \left(\mathrm{Sin}(\alpha - \beta) = -\frac{\sqrt{55}\sqrt{7}}{32} + \frac{9}{32}\right) \\ .5 = \left(\mathrm{Cos}(\alpha + \beta) = -\frac{3\sqrt{55}}{32} + \frac{3\sqrt{7}}{32}\right) & .6 = \left(\mathrm{Tan}(\beta - \alpha) = \frac{\sqrt{55}}{9} - \frac{4\sqrt{7}}{9}\right) \\ .7 = \left(\mathrm{Cos}(2\alpha) = \frac{1}{8}\right) & .8 = \left(\mathrm{Tan}(2\beta) = \frac{3\sqrt{55}}{23}\right) \end{bmatrix}, \ , Ans4 = \begin{bmatrix} .1 = \left(\mathrm{Cos}(\alpha) = \frac{2\sqrt{6}}{7}\right) & .2 = \left(\mathrm{Sin}(\beta) = \frac{2\sqrt{2}}{3}\right) \\ .3 = \left(\mathrm{Tan}(\alpha) = -\frac{5\sqrt{6}}{12}\right) & .4 = \left(\mathrm{Sin}(\alpha - \beta) = \frac{5}{21} - \frac{4\sqrt{6}\sqrt{2}}{21}\right) \\ .5 = \left(\mathrm{Cos}(\alpha + \beta) = -\frac{2\sqrt{6}}{21} + \frac{10\sqrt{2}}{21}\right) & .6 = \left(\mathrm{Tan}(\beta - \alpha) = \frac{49\sqrt{2}}{88} - \frac{45\sqrt{2}\sqrt{3}}{88}\right) \\ .7 = \left(\mathrm{Sin}(2\alpha) = -\frac{20\sqrt{6}}{49}\right) & .8 = \left(\mathrm{Tan}(2\beta) = \frac{4\sqrt{2}}{7}\right) \end{bmatrix}, \ , \begin{bmatrix} :) \\ :(\\ M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \\ :) \\ :(\end{bmatrix}$$

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

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

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$$Ans1 = \begin{bmatrix} .1 = \left(\mathrm{Sin}\left(\frac{5\pi}{12}\right) = \frac{\sqrt{2}}{4} + \frac{\sqrt{2}\sqrt{3}}{4}\right) & .2 = \left(\mathrm{Cos}(105^{o}) = \frac{\sqrt{2}}{4} - \frac{\sqrt{2}\sqrt{3}}{4}\right) \\ .3 = \left(\mathrm{Tan}\left(\frac{\pi}{12}\right) = 2 - \sqrt{3}\right) & .4 = (\mathrm{Cot}((-255)^{o}) = -2 + \sqrt{3}) \\ .5 = \left(\mathrm{Tan}\left(\frac{11\pi}{12}\right) = -2 + \sqrt{3}\right) & .6 = (\mathrm{Csc}(195^{o}) = -\sqrt{2}\sqrt{3} - \sqrt{2}) \\ .7 = \left(\mathrm{Cos}\left(-\frac{\pi}{12}\right) = \frac{\sqrt{2}}{4} + \frac{\sqrt{2}\sqrt{3}}{4}\right) & .8 = (\mathrm{Sec}((-345)^{o}) = \sqrt{2}\sqrt{3} - \sqrt{2}) \end{bmatrix}, \ , \begin{bmatrix} \frac{:)}{:(} \\ M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \\ \frac{:)}{:(} \end{bmatrix}$$

$$Ans2 = \begin{bmatrix} .1 = \left(\left(1 - 2\,\mathrm{Sin}\left(\frac{\pi}{8}\right)\right)^2 = \left(\mathrm{Cos}\left(\frac{\pi}{4}\right) = \frac{\sqrt{2}}{2}\right)\right) & .2 = \left(\mathrm{Sin}\left(\frac{\pi}{15}\right)\mathrm{Cos}\left(\frac{13\pi}{30}\right) + \mathrm{Cos}\left(\frac{\pi}{15}\right)\mathrm{Sin}\left(\frac{13\pi}{30}\right) = \left(\mathrm{Sin}\left(\frac{\pi}{2}\right) = 1\right)\right) \\ .3 = \left(\mathrm{Cos}\left(\frac{2\pi}{9}\right)\mathrm{Cos}\left(\frac{\pi}{18}\right) + \mathrm{Sin}\left(\frac{2\pi}{9}\right)\mathrm{Sin}\left(\frac{\pi}{18}\right) = \left(\mathrm{Cos}\left(\frac{\pi}{6}\right) = \frac{\sqrt{3}}{2}\right)\right) & .4 = \left(\frac{\mathrm{Tan}(57^{o}) - \mathrm{Tan}(12^{o})}{1 + \mathrm{Tan}(57^{o})\,\mathrm{Tan}(12^{o})} = (\mathrm{Tan}(45^{o}) = 1)\right) \\ .5 = \left(2\,\mathrm{Cos}(15^{o})^2 - 1 = \left(\mathrm{Cos}(30^{o}) = \frac{\sqrt{3}}{2}\right)\right) & .6 = \left(\frac{2\,\mathrm{Tan}\left(\frac{\pi}{8}\right)}{1 - \mathrm{Tan}\left(\frac{\pi}{8}\right)^2} = \left(\mathrm{Tan}\left(\frac{\pi}{4}\right) = \mathrm{Tan}\left(\frac{\pi}{4}\right)\right)\right) \\ .7 = (\mathrm{Sin}(105^{o})\,\mathrm{Cos}(15^{o}) - \mathrm{Cos}(105^{o})\,\mathrm{Sin}(15^{o}) = (\mathrm{Sin}(90^{o}) = 1)) & .8 = \left(\mathrm{Cos}(48^{o})\,\mathrm{Cos}(12^{o}) - \mathrm{Sin}(48^{o})\,\mathrm{Sin}(12^{o}) = \left(\mathrm{Cos}(60^{o}) = \frac{1}{2}\right)\right) \\ .9 = \left(\mathrm{Cos}\left(\frac{\pi}{12}\right)^2 - \mathrm{Sin}\left(\frac{\pi}{12}\right)^2 = \left(\mathrm{Cos}\left(\frac{\pi}{6}\right) = \frac{\sqrt{3}}{2}\right)\right) & .10 = \left(2\,\mathrm{Sin}(22.5^{o})\,\mathrm{Cos}(22.5^{o}) = \left(\mathrm{Sin}(45^{o}) = \frac{\sqrt{2}}{2}\right)\right) \end{bmatrix}, \ , \begin{bmatrix} \frac{:)}{:(} \\ \frac{:)}{:(} \\ \left[\left[\begin{matrix} M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \end{matrix}\right]\right] \\ \frac{:)}{:(} \\ \frac{:)}{:(} \\ \frac{:)}{:(} \end{bmatrix}$$

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

$$Ans5 = (\mathrm{Cos}(41^{o}) = (\mathrm{Sqrt}(0.5695) = 0.755)), \ , \begin{bmatrix} M \\ U \\ T \end{bmatrix}$$

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

$$Ans1 = \begin{bmatrix} .1 = \left(\mathrm{Cos}\left(\frac{5\pi}{12}\right) = \frac{\sqrt{2}\sqrt{3}}{4} - \frac{\sqrt{2}}{4}\right) & .2 = \left(\mathrm{Sin}(15^o) = \frac{\sqrt{2}\sqrt{3}}{4} - \frac{\sqrt{2}}{4}\right) \\ .3 = \left(\mathrm{Tan}\left(\frac{7\pi}{12}\right) = -2 - \sqrt{3}\right) & .4 = \left(\mathrm{Cos}((-165)^o) = -\frac{\sqrt{2}}{4} - \frac{\sqrt{2}\sqrt{3}}{4}\right) \\ .5 = \left(\mathrm{Sec}\left(-\frac{19\pi}{12}\right) = \sqrt{2}\sqrt{3} + \sqrt{2}\right) & .6 = (\mathrm{Tan}((-195)^o) = -2 + \sqrt{3}) \\ .7 = \left(\mathrm{Cot}\left(\frac{23\pi}{12}\right) = -2 - \sqrt{3}\right) & .8 = \left(\mathrm{Sin}((-75)^o) = -\frac{\sqrt{2}}{4} - \frac{\sqrt{2}\sqrt{3}}{4}\right) \end{bmatrix}, \quad \begin{bmatrix} :) \\ :(\\ M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \\ :) \\ :(\end{bmatrix}$$

$$Ans2 = \begin{bmatrix} .1 = \left(\frac{\mathrm{Tan}\left(\frac{11\pi}{36}\right) - \mathrm{Tan}\left(\frac{\pi}{18}\right)}{1 + \mathrm{Tan}\left(\frac{11\pi}{36}\right)\mathrm{Tan}\left(\frac{\pi}{18}\right)} = \left(\mathrm{Tan}\left(\frac{\pi}{4}\right) = 1\right)\right) & .2 = \left(\mathrm{Sin}\left(\frac{5\pi}{36}\right)\mathrm{Cos}\left(\frac{\pi}{9}\right) + \mathrm{Cos}\left(\frac{5\pi}{36}\right)\mathrm{Sin}\left(\frac{\pi}{9}\right) = \left(\mathrm{Sin}\left(\frac{\pi}{4}\right) = \frac{\sqrt{2}}{2}\right)\right) \\ .3 = \left(1 - 2\,\mathrm{Sin}(15^o)^2 = \left(\mathrm{Cos}(30^o) = \frac{\sqrt{3}}{2}\right)\right) & .4 = \left(\frac{\mathrm{Tan}(40^o) + \mathrm{Tan}(20^o)}{1 - \mathrm{Tan}(40^o)\,\mathrm{Tan}(20^o)} = (\mathrm{Tan}(60^o) = \sqrt{3})\right) \\ .5 = \left(2\,\mathrm{Sin}\left(\frac{\pi}{8}\right)\mathrm{Cos}\left(\frac{\pi}{8}\right) = \left(\mathrm{Sin}\left(\frac{\pi}{4}\right) = \frac{\sqrt{2}}{2}\right)\right) & .6 = \left(\mathrm{Sin}\left(\frac{5\pi}{9}\right)\mathrm{Cos}\left(\frac{\pi}{18}\right) - \mathrm{Cos}\left(\frac{5\pi}{9}\right)\mathrm{Sin}\left(\frac{\pi}{18}\right) = \left(\mathrm{Sin}\left(\frac{\pi}{2}\right) = 1\right)\right) \\ .7 = \left(\mathrm{Cos}\left(\frac{\pi}{12}\right)^2 - \mathrm{Sin}\left(\frac{\pi}{12}\right)^2 = \left(\mathrm{Cos}\left(\frac{\pi}{6}\right) = \frac{\sqrt{3}}{2}\right)\right) & .8 = \left(\mathrm{Cos}(72^o)\,\mathrm{Cos}(12^o) + \mathrm{Sin}(72^o)\,\mathrm{Sin}(12^o) = \left(\mathrm{Cos}(60^o) = \frac{1}{2}\right)\right) \\ .9 = \left(\frac{2\,\mathrm{Tan}(22.5^o)}{1 - \mathrm{Tan}(22.5^o)^2} = (\mathrm{Tan}(45^o) = 1)\right) & .10 = \left(2\,\mathrm{Cos}(22.5^o)^2 - 1 = \left(\mathrm{Cos}(45^o) = \frac{\sqrt{2}}{2}\right)\right) \end{bmatrix}, \quad \begin{bmatrix} :) \\ :(\\ :) \\ :(\\ \begin{bmatrix}\begin{bmatrix} M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \end{bmatrix}\end{bmatrix} \\ :) \\ :(\\ :) \\ :(\\ :) \\ :(\end{bmatrix}$$

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

$$Ans5 = (\mathrm{Sin}(21^o) = (\mathrm{Sqrt}(0.1285) = 0.358)), \quad \begin{bmatrix} M \\ U \\ T \end{bmatrix}$$

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

$$Ans1 = \begin{bmatrix} .1 = \left(\text{Sin}(105^o) = \frac{\sqrt{2}}{4} + \frac{\sqrt{2}\sqrt{3}}{4}\right) & .2 = \left(\text{Cos}\left(\frac{5\pi}{12}\right) = \frac{\sqrt{2}\sqrt{3}}{4} - \frac{\sqrt{2}}{4}\right) \\ .3 = (\text{Tan}(15^o) = 2 - \sqrt{3}) & .4 = (\text{Cot}((-285)^o) = 2 - \sqrt{3}) \\ .5 = \left(\text{Tan}\left(-\frac{\pi}{12}\right) = -2 + \sqrt{3}\right) & .6 = (\text{Sec}(255^o) = -\sqrt{2}\sqrt{3} - \sqrt{2}) \\ .7 = \left(\text{Sin}\left(-\frac{17\pi}{12}\right) = \frac{\sqrt{2}}{4} + \frac{\sqrt{2}\sqrt{3}}{4}\right) & .8 = \left(\text{Csc}\left(\frac{19\pi}{12}\right) = -\sqrt{2}\sqrt{3} + \sqrt{2}\right) \end{bmatrix}, \begin{bmatrix} :) \\ :(\\ M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \\ :) \\ :(\end{bmatrix}$$

$$Ans2 = \begin{bmatrix} .1 = \left(\frac{\text{Tan}(55^o) - \text{Tan}(10^o)}{1 + \text{Tan}(55^o)\,\text{Tan}(10^o)} = (\text{Tan}(45^o) = 1)\right) & .2 = \left(\text{Cos}\left(\frac{11\pi}{18}\right)\text{Cos}\left(\frac{\pi}{9}\right) + \text{Sin}\left(\frac{11\pi}{18}\right)\text{Sin}\left(\frac{\pi}{9}\right) = \left(\text{Cos}\left(\frac{\pi}{2}\right) = 0\right)\right) \\ .3 = \left(1 - 2\,\text{Sin}\left(\frac{\pi}{8}\right)^2 = \left(\text{Cos}\left(\frac{\pi}{4}\right) = \frac{\sqrt{2}}{2}\right)\right) & .4 = \left(2\,\text{Cos}(22.5^o)^2 - 1 = \left(\text{Cos}(45^o) = \frac{\sqrt{2}}{2}\right)\right) \\ .5 = \left(\frac{2\,\text{Tan}\left(\frac{\pi}{12}\right)}{1 - \text{Tan}\left(\frac{\pi}{12}\right)^2} = \left(\text{Tan}\left(\frac{\pi}{6}\right) = \text{Tan}\left(\frac{\pi}{6}\right)\right)\right) & .6 = \left(\text{Cos}(18^o)\,\text{Cos}(12^o) - \text{Sin}(18^o)\,\text{Sin}(12^o) = \left(\text{Cos}(30^o) = \frac{\sqrt{3}}{2}\right)\right) \\ .7 = \left(\frac{\text{Tan}(33^o) + \text{Tan}(12^o)}{1 - \text{Tan}(33^o)\,\text{Tan}(12^o)} = (\text{Tan}(45^o) = 1)\right) & .8 = \left(\text{Sin}\left(\frac{5\pi}{36}\right)\text{Cos}\left(\frac{7\pi}{36}\right) + \text{Cos}\left(\frac{5\pi}{36}\right)\text{Sin}\left(\frac{7\pi}{36}\right) = \left(\text{Sin}\left(\frac{\pi}{3}\right) = \frac{\sqrt{3}}{2}\right)\right) \\ .9 = \left(\text{Cos}\left(\frac{\pi}{12}\right)^2 - \text{Sin}\left(\frac{\pi}{12}\right)^2 = \left(\text{Cos}\left(\frac{\pi}{6}\right) = \frac{\sqrt{3}}{2}\right)\right) & .10 = \left(2\,\text{Sin}(15^o)\,\text{Cos}(15^o) = \left(\text{Sin}(30^o) = \frac{1}{2}\right)\right) \end{bmatrix}, \begin{bmatrix} :) \\ :(\\ :) \\ :(\\ \begin{bmatrix}\begin{bmatrix} M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \end{bmatrix}\end{bmatrix} \\ :) \\ :(\\ :) \\ :(\\ :) \\ :(\end{bmatrix}$$

$$Ans3 = \begin{bmatrix} .1 = \left(\text{Sin}(\alpha) = \frac{2\sqrt{14}}{9}\right) & .2 = \left(\text{Cos}(\beta) = \frac{2\sqrt{2}}{3}\right) \\ .3 = \left(\text{Tan}(\alpha) = \frac{2\sqrt{14}}{5}\right) & .4 = \left(\text{Sin}(\alpha+\beta) = \frac{4\sqrt{2}\sqrt{14}}{27} - \frac{5}{27}\right) \\ .5 = \left(\text{Cos}(\alpha-\beta) = -\frac{2\sqrt{14}}{27} + \frac{10\sqrt{2}}{27}\right) & .6 = \left(\text{Tan}(\beta-\alpha) = -\frac{5\sqrt{2}\sqrt{7}}{8} - \frac{9\sqrt{2}}{8}\right) \\ .7 = \left(\text{Sin}(2\beta) = -\frac{4\sqrt{2}}{9}\right) & .8 = \left(\text{Tan}(2\alpha) = -\frac{20\sqrt{14}}{31}\right) \end{bmatrix}, \quad Ans4 = \begin{bmatrix} .1 = \left(\text{Cos}(\alpha) = -\frac{2\sqrt{6}}{5}\right) & .2 = \left(\text{Sin}(\beta) = -\frac{\sqrt{5}}{3}\right) \\ .3 = \left(\text{Tan}(\beta) = \frac{\sqrt{5}}{2}\right) & .4 = \left(\text{Sin}(\alpha+\beta) = -\frac{2}{15} + \frac{2\sqrt{6}\sqrt{5}}{15}\right) \\ .5 = \left(\text{Cos}(\alpha-\beta) = \frac{4\sqrt{6}}{15} - \frac{\sqrt{5}}{15}\right) & .6 = \left(\text{Tan}(\beta-\alpha) = \frac{50\sqrt{5}}{91} + \frac{18\sqrt{6}}{91}\right) \\ .7 = \left(\text{Cos}(2\alpha) = \frac{23}{25}\right) & .8 = (\text{Tan}(2\beta) = -4\sqrt{5}) \end{bmatrix}, \begin{bmatrix} :) \\ :(\\ M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \\ :) \\ :(\end{bmatrix}$$

$$Ans5 = (\text{Cos}(11^o) = (\text{Sqrt}(0.9635) = 0.982)), \quad \begin{bmatrix} M \\ U \\ T \end{bmatrix}$$

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

TrigonometryExercise4 Answers for No.14641

$$Ans1 = \begin{bmatrix} .1 = \left(\mathrm{Cos}(75^o) = \frac{\sqrt{2}\sqrt{3}}{4} - \frac{\sqrt{2}}{4}\right) & .2 = \left(\mathrm{Sin}\left(\frac{\pi}{12}\right) = \frac{\sqrt{2}\sqrt{3}}{4} - \frac{\sqrt{2}}{4}\right) \\ .3 = (\mathrm{Tan}(105^o) = -2 - \sqrt{3}) & .4 = \left(\mathrm{Cos}\left(\frac{13\pi}{12}\right) = -\frac{\sqrt{2}}{4} - \frac{\sqrt{2}\sqrt{3}}{4}\right) \\ .5 = \left(\mathrm{Sin}((-345)^o) = \frac{\sqrt{2}\sqrt{3}}{4} - \frac{\sqrt{2}}{4}\right) & .6 = \left(\mathrm{Csc}\left(-\frac{17\pi}{12}\right) = \sqrt{2}\sqrt{3} - \sqrt{2}\right) \\ .7 = (\mathrm{Tan}(285^o) = -2 - \sqrt{3}) & .8 = \left(\mathrm{Sec}\left(-\frac{19\pi}{12}\right) = \sqrt{2}\sqrt{3} + \sqrt{2}\right) \end{bmatrix}, \quad , \begin{bmatrix} \underline{:)} \\ :(\\ M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \\ \underline{:)} \\ :(\end{bmatrix}$$

$$Ans2 = \begin{bmatrix} .1 = \left(\mathrm{Cos}\left(\frac{\pi}{12}\right)^2 - \mathrm{Sin}\left(\frac{\pi}{12}\right)^2 = \left(\mathrm{Cos}\left(\frac{\pi}{6}\right) = \frac{\sqrt{3}}{2}\right)\right) & .2 = \left(\frac{2\,\mathrm{Tan}(15^o)}{1 - \mathrm{Tan}(15^o)^2} = \left(\mathrm{Tan}(30^o) = \frac{\sqrt{3}}{3}\right)\right) \\ .3 = \left(2\,\mathrm{Cos}(22.5^o)^2 - 1 = \left(\mathrm{Cos}(45^o) = \frac{\sqrt{2}}{2}\right)\right) & .4 = \left(\mathrm{Cos}(20^o)\,\mathrm{Cos}(25^o) - \mathrm{Sin}(20^o)\,\mathrm{Sin}(25^o) = \left(\mathrm{Cos}(45^o) = \frac{\sqrt{2}}{2}\right)\right) \\ .5 = \left(2\,\mathrm{Sin}\left(\frac{\pi}{8}\right)\mathrm{Cos}\left(\frac{\pi}{8}\right) = \left(\mathrm{Sin}\left(\frac{\pi}{4}\right) = \frac{\sqrt{2}}{2}\right)\right) & .6 = \left(\frac{\mathrm{Tan}(5^o) + \mathrm{Tan}(25^o)}{1 - \mathrm{Tan}(5^o)\,\mathrm{Tan}(25^o)} = \left(\mathrm{Tan}(30^o) = \frac{\sqrt{3}}{3}\right)\right) \\ .7 = \left(1 - 2\,\mathrm{Sin}(15^o)^2 = \left(\mathrm{Cos}(30^o) = \frac{\sqrt{3}}{2}\right)\right) & .8 = \left(\mathrm{Sin}\left(\frac{2\pi}{5}\right)\mathrm{Cos}\left(\frac{\pi}{15}\right) - \mathrm{Cos}\left(\frac{2\pi}{5}\right)\mathrm{Sin}\left(\frac{\pi}{15}\right) = \left(\mathrm{Sin}\left(\frac{\pi}{3}\right) = \frac{\sqrt{3}}{2}\right)\right) \\ .9 = \left(\mathrm{Cos}(42^o)\,\mathrm{Cos}(12^o) + \mathrm{Sin}(42^o)\,\mathrm{Sin}(12^o) = \left(\mathrm{Cos}(30^o) = \frac{\sqrt{3}}{2}\right)\right) & .10 = \left(\frac{\mathrm{Tan}\left(\frac{11\pi}{36}\right) - \mathrm{Tan}\left(\frac{\pi}{18}\right)}{1 + \mathrm{Tan}\left(\frac{11\pi}{36}\right)\mathrm{Tan}\left(\frac{\pi}{18}\right)} = \left(\mathrm{Tan}\left(\frac{\pi}{4}\right) = 1\right)\right) \end{bmatrix}, \quad , \begin{bmatrix} \underline{:)} \\ :(\\ \underline{:)} \\ :(\\ [[M, a, t, h, @, M, U, T]] \\ \underline{:)} \\ :(\\ \underline{:)} \\ :(\\ \underline{:)} \\ :(\end{bmatrix}$$

$$Ans3 = \begin{bmatrix} .1 = \left(\mathrm{Sin}(\alpha) = \frac{\sqrt{21}}{5}\right) & .2 = \left(\mathrm{Cos}(\beta) = \frac{\sqrt{11}}{6}\right) \\ .3 = \left(\mathrm{Tan}(\beta) = -\frac{5\sqrt{11}}{11}\right) & .4 = \left(\mathrm{Sin}(\alpha + \beta) = \frac{\sqrt{21}\sqrt{11}}{30} - \frac{1}{3}\right) \\ .5 = \left(\mathrm{Cos}(\alpha - \beta) = \frac{\sqrt{11}}{15} - \frac{\sqrt{21}}{6}\right) & .6 = \left(\mathrm{Tan}(\beta - \alpha) = \frac{125\sqrt{11}}{481} + \frac{72\sqrt{21}}{481}\right) \\ .7 = \left(\mathrm{Cos}(2\beta) = \frac{-7}{18}\right) & .8 = \left(\mathrm{Tan}(2\alpha) = -\frac{4\sqrt{21}}{17}\right) \end{bmatrix}, \quad , \quad Ans4 = \begin{bmatrix} .1 = \left(\mathrm{Sin}(\alpha) = \frac{\sqrt{3}}{2}\right) & .2 = \left(\mathrm{Cos}(\beta) = -\frac{\sqrt{55}}{8}\right) \\ .3 = \left(\mathrm{Tan}(\beta) = \frac{3\sqrt{55}}{55}\right) & .4 = \left(\mathrm{Sin}(\alpha - \beta) = -\frac{\sqrt{3}\sqrt{55}}{16} - \frac{3}{16}\right) \\ .5 = \left(\mathrm{Cos}(\alpha + \beta) = \frac{\sqrt{55}}{16} + \frac{3\sqrt{3}}{16}\right) & .6 = \left(\mathrm{Tan}(\beta - \alpha) = \frac{3\sqrt{55}}{7} + \frac{16\sqrt{3}}{7}\right) \\ .7 = \left(\mathrm{Cos}(2\alpha) = \frac{-1}{2}\right) & .8 = \left(\mathrm{Tan}(2\beta) = \frac{3\sqrt{55}}{23}\right) \end{bmatrix}, \quad , \begin{bmatrix} \underline{:)} \\ :(\\ M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \\ \underline{:)} \\ :(\end{bmatrix}$$

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

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

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

$$Ans2 = \begin{bmatrix} .1 = \left(2\,\mathrm{Cos}(15^o)^2 - 1 = \left(\mathrm{Cos}(30^o) = \frac{\sqrt{3}}{2}\right)\right) & .2 = \left(2\,\mathrm{Sin}(22.5^o)\,\mathrm{Cos}(22.5^o) = \left(\mathrm{Sin}(45^o) = \frac{\sqrt{2}}{2}\right)\right) \\ .3 = \left(\dfrac{\mathrm{Tan}\left(\frac{5\pi}{36}\right) + \mathrm{Tan}\left(\frac{7\pi}{36}\right)}{1 - \mathrm{Tan}\left(\frac{5\pi}{36}\right)\mathrm{Tan}\left(\frac{7\pi}{36}\right)} = \left(\mathrm{Tan}\left(\frac{\pi}{3}\right) = \sqrt{3}\right)\right) & .4 = \left(1 - 2\,\mathrm{Sin}\left(\frac{\pi}{8}\right)^2 = \left(\mathrm{Cos}\left(\frac{\pi}{4}\right) = \frac{\sqrt{2}}{2}\right)\right) \\ .5 = \left(\dfrac{\mathrm{Tan}\left(\frac{13\pi}{36}\right) - \mathrm{Tan}\left(\frac{\pi}{9}\right)}{1 + \mathrm{Tan}\left(\frac{13\pi}{36}\right)\mathrm{Tan}\left(\frac{\pi}{9}\right)} = \left(\mathrm{Tan}\left(\frac{\pi}{4}\right) = 1\right)\right) & .6 = \left(\dfrac{2\,\mathrm{Tan}(15^o)}{1 - \mathrm{Tan}(15^o)^2} = \left(\mathrm{Tan}(30^o) = \frac{\sqrt{3}}{3}\right)\right) \\ .7 = \left(\mathrm{Cos}(40^o)\,\mathrm{Cos}(10^o) + \mathrm{Sin}(40^o)\,\mathrm{Sin}(10^o) = \left(\mathrm{Cos}(30^o) = \frac{\sqrt{3}}{2}\right)\right) & .8 = \left(\mathrm{Sin}\left(\frac{\pi}{15}\right)\mathrm{Cos}\left(\frac{\pi}{10}\right) + \mathrm{Cos}\left(\frac{\pi}{15}\right)\mathrm{Sin}\left(\frac{\pi}{10}\right) = \left(\mathrm{Sin}\left(\frac{\pi}{6}\right) = \frac{1}{2}\right)\right) \\ .9 = \left(\mathrm{Cos}\left(\frac{\pi}{12}\right)^2 - \mathrm{Sin}\left(\frac{\pi}{12}\right)^2 = \left(\mathrm{Cos}\left(\frac{\pi}{6}\right) = \frac{\sqrt{3}}{2}\right)\right) & .10 = (\mathrm{Cos}(75^o)\,\mathrm{Cos}(15^o) - \mathrm{Sin}(75^o)\,\mathrm{Sin}(15^o) = (\mathrm{Cos}(90^o) = 0)) \end{bmatrix}, \ , \begin{bmatrix} :) \\ :(\\ :) \\ :(\\ \begin{bmatrix}\begin{bmatrix} M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \end{bmatrix}\end{bmatrix} \\ :) \\ :(\\ :) \\ :(\\ :) \\ :(\end{bmatrix}$$

$$Ans3 = \begin{bmatrix} .1 = \left(\mathrm{Sin}(\alpha) = \frac{\sqrt{5}}{3}\right) & .2 = \left(\mathrm{Cos}(\beta) = \frac{2\sqrt{6}}{5}\right) \\ .3 = \left(\mathrm{Tan}(\beta) = -\frac{\sqrt{6}}{12}\right) & .4 = \left(\mathrm{Sin}(\alpha + \beta) = -\frac{2}{15} + \frac{2\sqrt{6}\sqrt{5}}{15}\right) \\ .5 = \left(\mathrm{Cos}(\beta - \alpha) = \frac{4\sqrt{6}}{15} - \frac{\sqrt{5}}{15}\right) & .6 = \left(\mathrm{Tan}(\alpha - \beta) = \frac{50\sqrt{5}}{91} + \frac{18\sqrt{6}}{91}\right) \\ .7 = \left(\mathrm{Cos}(2\beta) = \frac{23}{25}\right) & .8 = (\mathrm{Tan}(2\alpha) = -4\sqrt{5}) \end{bmatrix}, \ , Ans4 = \begin{bmatrix} .1 = \left(\mathrm{Sin}(\alpha) = \frac{\sqrt{3}}{2}\right) & .2 = \left(\mathrm{Cos}(\beta) = -\frac{\sqrt{15}}{4}\right) \\ .3 = (\mathrm{Tan}(\alpha) = -\sqrt{3}) & .4 = \left(\mathrm{Sin}(\alpha - \beta) = -\frac{\sqrt{15}\sqrt{3}}{8} - \frac{1}{8}\right) \\ .5 = \left(\mathrm{Cos}(\beta - \alpha) = \frac{\sqrt{15}}{8} - \frac{\sqrt{3}}{8}\right) & .6 = \left(\mathrm{Tan}(\alpha + \beta) = \frac{\sqrt{5}\sqrt{3}}{3} - \frac{4\sqrt{3}}{3}\right) \\ .7 = \left(\mathrm{Cos}(2\alpha) = \frac{-1}{2}\right) & .8 = \left(\mathrm{Tan}(2\beta) = \frac{\sqrt{15}}{7}\right) \end{bmatrix}, \ , \begin{bmatrix} :) \\ :(\\ M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \\ :) \\ :(\end{bmatrix}$$

$$Ans5 = (\mathrm{Sin}(10^o) = (\mathrm{Sqrt}(0.0300) = 0.174)), \ , \begin{bmatrix} M \\ U \\ T \end{bmatrix}$$

$$Ans6 = (\mathrm{Cos}(21^o) = (\mathrm{Sqrt}(0.8715) = 0.934)), \ , \begin{bmatrix} M \\ U \\ T \end{bmatrix}$$

TrigonometryExercise4 Answers for No.14688

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

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

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

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

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

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

$$Ans2 = \begin{bmatrix} .1 = (\mathrm{Cos}(110^o)\,\mathrm{Cos}(20^o) + \mathrm{Sin}(110^o)\,\mathrm{Sin}(20^o) = (\mathrm{Cos}(90^o) = 0)) & .2 = \left(\mathrm{Cos}\left(\frac{\pi}{18}\right)\mathrm{Cos}\left(\frac{4\pi}{9}\right) - \mathrm{Sin}\left(\frac{\pi}{18}\right)\mathrm{Sin}\left(\frac{4\pi}{9}\right) = \left(\mathrm{Cos}\left(\frac{\pi}{2}\right) = 0\right)\right) \\ .3 = \left(\mathrm{Sin}(40^o)\,\mathrm{Cos}(10^o) - \mathrm{Cos}(40^o)\,\mathrm{Sin}(10^o) = \left(\mathrm{Sin}(30^o) = \frac{1}{2}\right)\right) & .4 = \left(2\,\mathrm{Cos}(22.5^o)^2 - 1 = \left(\mathrm{Cos}(45^o) = \frac{\sqrt{2}}{2}\right)\right) \\ .5 = \left(\frac{\mathrm{Tan}\left(\frac{\pi}{9}\right) + \mathrm{Tan}\left(\frac{5\pi}{36}\right)}{1 - \mathrm{Tan}\left(\frac{\pi}{9}\right)\mathrm{Tan}\left(\frac{5\pi}{36}\right)} = \left(\mathrm{Tan}\left(\frac{\pi}{4}\right) = 1\right)\right) & .6 = \left(\mathrm{Sin}(50^o)\,\mathrm{Cos}(10^o) + \mathrm{Cos}(50^o)\,\mathrm{Sin}(10^o) = \left(\mathrm{Sin}(60^o) = \frac{\sqrt{3}}{2}\right)\right) \\ .7 = \left(2\,\mathrm{Sin}(15^o)\,\mathrm{Cos}(15^o) = \left(\mathrm{Sin}(30^o) = \frac{1}{2}\right)\right) & .8 = \left(1 - 2\,\mathrm{Sin}\left(\frac{\pi}{8}\right)^2 = \left(\mathrm{Cos}\left(\frac{\pi}{4}\right) = \frac{\sqrt{2}}{2}\right)\right) \\ .9 = \left(\frac{2\,\mathrm{Tan}(22.5^o)}{1 - \mathrm{Tan}(22.5^o)^2} = (\mathrm{Tan}(45^o) = 1)\right) & .10 = \left(\mathrm{Cos}\left(\frac{\pi}{12}\right)^2 - \mathrm{Sin}\left(\frac{\pi}{12}\right)^2 = \left(\mathrm{Cos}\left(\frac{\pi}{6}\right) = \frac{\sqrt{3}}{2}\right)\right) \end{bmatrix}, \begin{bmatrix} :) \\ :(\\ :) \\ :(\\ \begin{bmatrix}\begin{bmatrix} M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \end{bmatrix}\end{bmatrix} \\ :) \\ :(\\ :) \\ :(\\ :) \\ :(\end{bmatrix}$$

$$Ans3 = \begin{bmatrix} .1 = \left(\mathrm{Sin}(\alpha) = \frac{4}{5}\right) & .2 = \left(\mathrm{Cos}(\beta) = -\frac{2\sqrt{10}}{7}\right) \\ .3 = \left(\mathrm{Tan}(\alpha) = \frac{4}{3}\right) & .4 = \left(\mathrm{Sin}(\alpha - \beta) = -\frac{8\sqrt{10}}{35} - \frac{9}{35}\right) \\ .5 = \left(\mathrm{Cos}(\beta - \alpha) = -\frac{6\sqrt{10}}{35} + \frac{12}{35}\right) & .6 = \left(\mathrm{Tan}(\alpha + \beta) = \frac{49}{18} - \frac{25\sqrt{10}}{36}\right) \\ .7 = \left(\mathrm{Cos}(2\,\alpha) = \frac{-7}{25}\right) & .8 = \left(\mathrm{Tan}(2\,\beta) = -\frac{12\sqrt{10}}{31}\right) \end{bmatrix}, \quad Ans4 = \begin{bmatrix} .1 = \left(\mathrm{Cos}(\alpha) = \frac{2\sqrt{2}}{3}\right) & .2 = \left(\mathrm{Sin}(\beta) = -\frac{\sqrt{21}}{5}\right) \\ .3 = \left(\mathrm{Tan}(\alpha) = -\frac{\sqrt{2}}{4}\right) & .4 = \left(\mathrm{Sin}(\alpha - \beta) = \frac{2}{15} + \frac{2\sqrt{2}\sqrt{21}}{15}\right) \\ .5 = \left(\mathrm{Cos}(\alpha + \beta) = -\frac{4\sqrt{2}}{15} - \frac{\sqrt{21}}{15}\right) & .6 = \left(\mathrm{Tan}(\beta - \alpha) = \frac{18\sqrt{21}}{11} + \frac{50\sqrt{2}}{11}\right) \\ .7 = \left(\mathrm{Sin}(2\,\beta) = \frac{4\sqrt{21}}{25}\right) & .8 = \left(\mathrm{Tan}(2\,\alpha) = -\frac{4\sqrt{2}}{7}\right) \end{bmatrix}, \begin{bmatrix} :) \\ :(\\ M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \\ :) \\ :(\end{bmatrix}$$

$$Ans5 = (\mathrm{Sin}(39^o) = (\mathrm{Sqrt}(0.3960) = 0.629)), \begin{bmatrix} M \\ U \\ T \end{bmatrix}$$

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

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$$Ans1 = \begin{bmatrix} .1 = \left(\text{Cos}\left(\frac{\pi}{12}\right) = \frac{\sqrt{2}}{4} + \frac{\sqrt{2}\sqrt{3}}{4}\right) & .2 = \left(\text{Sin}(75^o) = \frac{\sqrt{2}}{4} + \frac{\sqrt{2}\sqrt{3}}{4}\right) \\ .3 = \left(\text{Tan}\left(\frac{7\pi}{12}\right) = -2 - \sqrt{3}\right) & .4 = \left(\text{Sin}(285^o) = -\frac{\sqrt{2}}{4} - \frac{\sqrt{2}\sqrt{3}}{4}\right) \\ .5 = \left(\text{Csc}\left(-\frac{5\pi}{12}\right) = -\sqrt{2}\sqrt{3} + \sqrt{2}\right) & .6 = \left(\text{Tan}\left(\frac{17\pi}{12}\right) = 2 + \sqrt{3}\right) \\ .7 = (\text{Sec}(165^o) = -\sqrt{2}\sqrt{3} + \sqrt{2}) & .8 = \left(\text{Cot}\left(\frac{23\pi}{12}\right) = -2 - \sqrt{3}\right) \end{bmatrix}, \ , \begin{bmatrix} :) \\ :(\\ M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \\ :) \\ :(\end{bmatrix}$$

$$Ans2 = \begin{bmatrix} .1 = \left(2\,\text{Sin}\left(\frac{\pi}{12}\right)\text{Cos}\left(\frac{\pi}{12}\right) = \left(\text{Sin}\left(\frac{\pi}{6}\right) = \frac{1}{2}\right)\right) & .2 = \left(\text{Cos}(15^o)^2 - \text{Sin}(15^o)^2 = \left(\text{Cos}(30^o) = \frac{\sqrt{3}}{2}\right)\right) \\ .3 = (\text{Cos}(80^o)\,\text{Cos}(10^o) - \text{Sin}(80^o)\,\text{Sin}(10^o) = (\text{Cos}(90^o) = 0)) & .4 = \left(\frac{\text{Tan}\left(\frac{2\pi}{5}\right) - \text{Tan}\left(\frac{\pi}{15}\right)}{1 + \text{Tan}\left(\frac{2\pi}{5}\right)\text{Tan}\left(\frac{\pi}{15}\right)} = \left(\text{Tan}\left(\frac{\pi}{3}\right) = \sqrt{3}\right)\right) \\ .5 = \left(\frac{\text{Tan}\left(\frac{4\pi}{15}\right) + \text{Tan}\left(\frac{\pi}{15}\right)}{1 - \text{Tan}\left(\frac{4\pi}{15}\right)\text{Tan}\left(\frac{\pi}{15}\right)} = \left(\text{Tan}\left(\frac{\pi}{3}\right) = \sqrt{3}\right)\right) & .6 = \left(\frac{2\,\text{Tan}\left(\frac{\pi}{8}\right)}{1 - \text{Tan}\left(\frac{\pi}{8}\right)^2} = \left(\text{Tan}\left(\frac{\pi}{4}\right) = \text{Tan}\left(\frac{\pi}{4}\right)\right)\right) \\ .7 = \left(\text{Sin}(65^o)\,\text{Cos}(20^o) - \text{Cos}(65^o)\,\text{Sin}(20^o) = \left(\text{Sin}(45^o) = \frac{\sqrt{2}}{2}\right)\right) & .8 = \left(1 - 2\,\text{Sin}\left(\frac{\pi}{8}\right)^2 = \left(\text{Cos}\left(\frac{\pi}{4}\right) = \frac{\sqrt{2}}{2}\right)\right) \\ .9 = \left(\text{Sin}\left(\frac{\pi}{18}\right)\text{Cos}\left(\frac{\pi}{9}\right) + \text{Cos}\left(\frac{\pi}{18}\right)\text{Sin}\left(\frac{\pi}{9}\right) = \left(\text{Sin}\left(\frac{\pi}{6}\right) = \frac{1}{2}\right)\right) & .10 = \left(2\,\text{Cos}(22.5^o)^2 - 1 = \left(\text{Cos}(45^o) = \frac{\sqrt{2}}{2}\right)\right) \end{bmatrix}, \ , \begin{bmatrix} :) \\ :(\\ :) \\ :(\\ \left[\left[\begin{bmatrix} M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \end{bmatrix}\right]\right] \\ :) \\ :(\\ :) \\ :(\\ :) \\ :(\end{bmatrix}$$

$$Ans3 = \begin{bmatrix} .1 = \left(\text{Cos}(\alpha) = \frac{2\sqrt{2}}{3}\right) & .2 = \left(\text{Sin}(\beta) = \frac{2\sqrt{6}}{7}\right) \\ .3 = \left(\text{Tan}(\alpha) = \frac{\sqrt{2}}{4}\right) & .4 = \left(\text{Sin}(\alpha + \beta) = -\frac{5}{21} + \frac{4\sqrt{6}\sqrt{2}}{21}\right) \\ .5 = \left(\text{Cos}(\beta - \alpha) = -\frac{10\sqrt{2}}{21} + \frac{2\sqrt{6}}{21}\right) & .6 = \left(\text{Tan}(\alpha - \beta) = \frac{49\sqrt{2}}{88} + \frac{45\sqrt{2}\sqrt{3}}{88}\right) \\ .7 = \left(\text{Cos}(2\alpha) = \frac{7}{9}\right) & .8 = (\text{Tan}(2\beta) = -20\sqrt{6}) \end{bmatrix}, \ , Ans4 = \begin{bmatrix} .1 = \left(\text{Cos}(\alpha) = \frac{\sqrt{35}}{6}\right) & .2 = \left(\text{Sin}(\beta) = -\frac{2\sqrt{10}}{7}\right) \\ .3 = \left(\text{Tan}(\beta) = \frac{2\sqrt{10}}{3}\right) & .4 = \left(\text{Sin}(\beta - \alpha) = -\frac{\sqrt{35}\sqrt{10}}{21} - \frac{1}{14}\right) \\ .5 = \left(\text{Cos}(\alpha - \beta) = -\frac{\sqrt{35}}{14} + \frac{\sqrt{10}}{21}\right) & .6 = \left(\text{Tan}(\alpha + \beta) = -\frac{49\sqrt{5}\sqrt{7}}{275} + \frac{216\sqrt{2}\sqrt{5}}{275}\right) \\ .7 = \left(\text{Cos}(2\beta) = \frac{-31}{49}\right) & .8 = \left(\text{Tan}(2\alpha) = -\frac{\sqrt{35}}{17}\right) \end{bmatrix}, \ , \begin{bmatrix} :) \\ :(\\ M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \\ :) \\ :(\end{bmatrix}$$

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

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

TrigonometryExercise4 Answers for No.14746

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

$$Ans2 = \begin{bmatrix} .1 = \left(2\,\text{Sin}(22.5^o)\,\text{Cos}(22.5^o) = \left(\text{Sin}(45^o) = \frac{\sqrt{2}}{2}\right)\right) & .2 = \left(\frac{\text{Tan}\left(\frac{\pi}{15}\right) + \text{Tan}\left(\frac{\pi}{10}\right)}{1 - \text{Tan}\left(\frac{\pi}{15}\right)\text{Tan}\left(\frac{\pi}{10}\right)} = \left(\text{Tan}\left(\frac{\pi}{6}\right) = \frac{\sqrt{3}}{3}\right)\right) \\ .3 = \left(\text{Sin}(25^o)\,\text{Cos}(35^o) + \text{Cos}(25^o)\,\text{Sin}(35^o) = \left(\text{Sin}(60^o) = \frac{\sqrt{3}}{2}\right)\right) & .4 = \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) \\ .5 = \left(\frac{\text{Tan}(50^o) - \text{Tan}(20^o)}{1 + \text{Tan}(50^o)\,\text{Tan}(20^o)} = \left(\text{Tan}(30^o) = \frac{\sqrt{3}}{3}\right)\right) & .6 = \left(2\,\text{Cos}\left(\frac{\pi}{8}\right)^2 - 1 = \left(\text{Cos}\left(\frac{\pi}{4}\right) = \frac{\sqrt{2}}{2}\right)\right) \\ .7 = \left(\text{Cos}(15^o)^2 - \text{Sin}(15^o)^2 = \left(\text{Cos}(30^o) = \frac{\sqrt{3}}{2}\right)\right) & .8 = \left(\text{Cos}\left(\frac{17\pi}{36}\right)\text{Cos}\left(\frac{5\pi}{36}\right) + \text{Sin}\left(\frac{17\pi}{36}\right)\text{Sin}\left(\frac{5\pi}{36}\right) = \left(\text{Cos}\left(\frac{\pi}{3}\right) = \frac{1}{2}\right)\right) \\ .9 = \left(\text{Cos}\left(\frac{\pi}{9}\right)\text{Cos}\left(\frac{5\pi}{36}\right) - \text{Sin}\left(\frac{\pi}{9}\right)\text{Sin}\left(\frac{5\pi}{36}\right) = \left(\text{Cos}\left(\frac{\pi}{4}\right) = \frac{\sqrt{2}}{2}\right)\right) & .10 = \left(\frac{2\,\text{Tan}\left(\frac{\pi}{12}\right)}{1 - \text{Tan}\left(\frac{\pi}{12}\right)^2} = \left(\text{Tan}\left(\frac{\pi}{6}\right) = \text{Tan}\left(\frac{\pi}{6}\right)\right)\right) \end{bmatrix}, \quad , \begin{bmatrix} \underline{:)} \\ :(\\ \underline{:)} \\ :(\\ \begin{bmatrix}\begin{bmatrix} M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \end{bmatrix}\end{bmatrix} \\ \underline{:)} \\ :(\\ \underline{:)} \\ :(\\ \underline{:)} \\ :(\end{bmatrix}$$

$$Ans3 = \begin{bmatrix} .1 = \left(\text{Sin}(\alpha) = \frac{\sqrt{33}}{7}\right) & .2 = \left(\text{Cos}(\beta) = \frac{2\sqrt{6}}{7}\right) \\ .3 = \left(\text{Tan}(\alpha) = \frac{\sqrt{33}}{4}\right) & .4 = \left(\text{Sin}(\beta - \alpha) = -\frac{20}{49} - \frac{2\sqrt{33}\sqrt{6}}{49}\right) \\ .5 = \left(\text{Cos}(\alpha + \beta) = \frac{8\sqrt{6}}{49} + \frac{5\sqrt{33}}{49}\right) & .6 = \left(\text{Tan}(\alpha - \beta) = -\frac{4\sqrt{3}\sqrt{11}}{9} - \frac{10\sqrt{2}\sqrt{3}}{9}\right) \\ .7 = \left(\text{Sin}(2\alpha) = \frac{8\sqrt{33}}{49}\right) & .8 = (\text{Tan}(2\beta) = 20\sqrt{6}) \end{bmatrix}, \quad , \quad Ans4 = \begin{bmatrix} .1 = \left(\text{Cos}(\alpha) = -\frac{\sqrt{3}}{2}\right) & .2 = \left(\text{Sin}(\beta) = -\frac{2\sqrt{10}}{7}\right) \\ .3 = \left(\text{Tan}(\beta) = \frac{2\sqrt{10}}{3}\right) & .4 = \left(\text{Sin}(\alpha - \beta) = -\frac{3}{14} - \frac{\sqrt{3}\sqrt{10}}{7}\right) \\ .5 = \left(\text{Cos}(\alpha + \beta) = \frac{3\sqrt{3}}{14} + \frac{\sqrt{10}}{7}\right) & .6 = \left(\text{Tan}(\beta - \alpha) = -\frac{24\sqrt{10}}{13} - \frac{49\sqrt{3}}{13}\right) \\ .7 = \left(\text{Sin}(2\alpha) = -\frac{\sqrt{3}}{2}\right) & .8 = \left(\text{Tan}(2\beta) = -\frac{12\sqrt{10}}{31}\right) \end{bmatrix}, \quad , \begin{bmatrix} \underline{:)} \\ :(\\ M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \\ \underline{:)} \\ :(\end{bmatrix}$$

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

$$Ans6 = (\text{Cos}(36^o) = (\text{Sqrt}(0.6545) = 0.809)), \quad , \begin{bmatrix} M \\ U \\ T \end{bmatrix}$$

$$Ans1 = \begin{bmatrix} .1 = \left(\mathrm{Sin}\left(\frac{5\pi}{12}\right) = \frac{\sqrt{2}}{4} + \frac{\sqrt{2}\sqrt{3}}{4}\right) & .2 = \left(\mathrm{Cos}(15^o) = \frac{\sqrt{2}}{4} + \frac{\sqrt{2}\sqrt{3}}{4}\right) \\ .3 = \left(\mathrm{Tan}\left(\frac{7\pi}{12}\right) = -2 - \sqrt{3}\right) & .4 = \left(\mathrm{Cos}(285^o) = \frac{\sqrt{2}\sqrt{3}}{4} - \frac{\sqrt{2}}{4}\right) \\ .5 = \left(\mathrm{Sec}\left(-\frac{19\pi}{12}\right) = \sqrt{2}\sqrt{3} + \sqrt{2}\right) & .6 = (\mathrm{Tan}((-165)^o) = 2 - \sqrt{3}) \\ .7 = \left(\mathrm{Cot}\left(-\frac{13\pi}{12}\right) = -2 - \sqrt{3}\right) & .8 = \left(\mathrm{Sin}\left(-\frac{17\pi}{12}\right) = \frac{\sqrt{2}}{4} + \frac{\sqrt{2}\sqrt{3}}{4}\right) \end{bmatrix}, \begin{bmatrix} :) \\ :(\\ M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \\ :) \\ :(\end{bmatrix}$$

$$Ans2 = \begin{bmatrix} .1 = \left(\mathrm{Sin}(65^o)\,\mathrm{Cos}(20^o) - \mathrm{Cos}(65^o)\,\mathrm{Sin}(20^o) = \left(\mathrm{Sin}(45^o) = \frac{\sqrt{2}}{2}\right)\right) & .2 = \left(\mathrm{Sin}\left(\frac{\pi}{12}\right)\mathrm{Cos}\left(\frac{5\pi}{12}\right) + \mathrm{Cos}\left(\frac{\pi}{12}\right)\mathrm{Sin}\left(\frac{5\pi}{12}\right) = \left(\mathrm{Sin}\left(\frac{\pi}{2}\right) = 1\right)\right) \\ .3 = \left(2\,\mathrm{Cos}(15^o)^2 - 1 = \left(\mathrm{Cos}(30^o) = \frac{\sqrt{3}}{2}\right)\right) & .4 = \left(\frac{2\,\mathrm{Tan}(22.5^o)}{1 - \mathrm{Tan}(22.5^o)^2} = (\mathrm{Tan}(45^o) = 1)\right) \\ .5 = \left(\frac{\mathrm{Tan}\left(\frac{11\pi}{60}\right) + \mathrm{Tan}\left(\frac{\pi}{15}\right)}{1 - \mathrm{Tan}\left(\frac{11\pi}{60}\right)\mathrm{Tan}\left(\frac{\pi}{15}\right)} = \left(\mathrm{Tan}\left(\frac{\pi}{4}\right) = 1\right)\right) & .6 = \left(\mathrm{Cos}\left(\frac{\pi}{12}\right)^2 - \mathrm{Sin}\left(\frac{\pi}{12}\right)^2 = \left(\mathrm{Cos}\left(\frac{\pi}{6}\right) = \frac{\sqrt{3}}{2}\right)\right) \\ .7 = \left(\frac{\mathrm{Tan}(70^o) - \mathrm{Tan}(10^o)}{1 + \mathrm{Tan}(70^o)\,\mathrm{Tan}(10^o)} = (\mathrm{Tan}(60^o) = \sqrt{3})\right) & .8 = \left(2\,\mathrm{Sin}\left(\frac{\pi}{8}\right)\mathrm{Cos}\left(\frac{\pi}{8}\right) = \left(\mathrm{Sin}\left(\frac{\pi}{4}\right) = \frac{\sqrt{2}}{2}\right)\right) \\ .9 = \left(1 - 2\,\mathrm{Sin}(22.5^o)^2 = \left(\mathrm{Cos}(45^o) = \frac{\sqrt{2}}{2}\right)\right) & .10 = \left(\mathrm{Cos}\left(\frac{7\pi}{30}\right)\mathrm{Cos}\left(\frac{\pi}{15}\right) + \mathrm{Sin}\left(\frac{7\pi}{30}\right)\mathrm{Sin}\left(\frac{\pi}{15}\right) = \left(\mathrm{Cos}\left(\frac{\pi}{6}\right) = \frac{\sqrt{3}}{2}\right)\right) \end{bmatrix}, \begin{bmatrix} :) \\ :(\\ :) \\ :(\\ \left[\left[\begin{matrix} M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \end{matrix}\right]\right] \\ :) \\ :(\\ :) \\ :(\\ :) \\ :(\end{bmatrix}$$

$$Ans3 = \begin{bmatrix} .1 = \left(\mathrm{Cos}(\alpha) = \frac{\sqrt{21}}{5}\right) & .2 = \left(\mathrm{Sin}(\beta) = \frac{\sqrt{3}}{2}\right) \\ .3 = (\mathrm{Tan}(\beta) = -\sqrt{3}) & .4 = \left(\mathrm{Sin}(\alpha - \beta) = -\frac{\sqrt{21}\sqrt{3}}{10} - \frac{1}{5}\right) \\ .5 = \left(\mathrm{Cos}(\alpha + \beta) = -\frac{\sqrt{3}}{5} - \frac{\sqrt{21}}{10}\right) & .6 = \left(\mathrm{Tan}(\beta - \alpha) = -\frac{25\sqrt{3}}{9} - \frac{8\sqrt{7}\sqrt{3}}{9}\right) \\ .7 = \left(\mathrm{Sin}(2\beta) = -\frac{\sqrt{3}}{2}\right) & .8 = \left(\mathrm{Tan}(2\alpha) = \frac{4\sqrt{21}}{17}\right) \end{bmatrix}, \quad Ans4 = \begin{bmatrix} .1 = \left(\mathrm{Sin}(\alpha) = -\frac{\sqrt{5}}{3}\right) & .2 = \left(\mathrm{Cos}(\beta) = \frac{\sqrt{21}}{5}\right) \\ .3 = \left(\mathrm{Tan}(\beta) = -\frac{2\sqrt{21}}{21}\right) & .4 = \left(\mathrm{Sin}(\beta - \alpha) = \frac{4}{15} + \frac{\sqrt{21}\sqrt{5}}{15}\right) \\ .5 = \left(\mathrm{Cos}(\alpha - \beta) = -\frac{2\sqrt{21}}{15} + \frac{2\sqrt{5}}{15}\right) & .6 = \left(\mathrm{Tan}(\alpha + \beta) = \frac{25\sqrt{5}}{32} - \frac{9\sqrt{21}}{32}\right) \\ .7 = \left(\mathrm{Cos}(2\beta) = \frac{17}{25}\right) & .8 = (\mathrm{Tan}(2\alpha) = -4\sqrt{5}) \end{bmatrix}, \begin{bmatrix} :) \\ :(\\ M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \\ :) \\ :(\end{bmatrix}$$

$$Ans5 = (\mathrm{Cos}(4^o) = (\mathrm{Sqrt}(0.9950) = 0.998)), \begin{bmatrix} M \\ U \\ T \end{bmatrix}$$

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

$$Ans1 = \begin{bmatrix} .1 = \left(\text{Cos}(105^{o}) = \frac{\sqrt{2}}{4} - \frac{\sqrt{2}\sqrt{3}}{4}\right) & .2 = \left(\text{Sin}\left(\frac{\pi}{12}\right) = \frac{\sqrt{2}\sqrt{3}}{4} - \frac{\sqrt{2}}{4}\right) \\ .3 = \left(\text{Tan}\left(\frac{5\pi}{12}\right) = 2 + \sqrt{3}\right) & .4 = \left(\text{Sec}\left(\frac{17\pi}{12}\right) = -\sqrt{2}\sqrt{3} - \sqrt{2}\right) \\ .5 = \left(\text{Cos}((-195)^{o}) = -\frac{\sqrt{2}}{4} - \frac{\sqrt{2}\sqrt{3}}{4}\right) & .6 = \left(\text{Tan}\left(-\frac{7\pi}{12}\right) = 2 + \sqrt{3}\right) \\ .7 = (\text{Cot}((-75)^{o}) = -2 + \sqrt{3}) & .8 = \left(\text{Sin}\left(-\frac{23\pi}{12}\right) = \frac{\sqrt{2}\sqrt{3}}{4} - \frac{\sqrt{2}}{4}\right) \end{bmatrix}, \quad , \begin{bmatrix} :) \\ :(\\ M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \\ :) \\ :(\end{bmatrix}$$

$$Ans2 = \begin{bmatrix} .1 = \left(\frac{2\,\text{Tan}(22.5^{o})}{1 - \text{Tan}(22.5^{o})^{2}} = (\text{Tan}(45^{o}) = 1)\right) & .2 = \left(\text{Cos}(65^{o})\,\text{Cos}(20^{o}) + \text{Sin}(65^{o})\,\text{Sin}(20^{o}) = \left(\text{Cos}(45^{o}) = \frac{\sqrt{2}}{2}\right)\right) \\ .3 = \left(\text{Cos}(15^{o})^{2} - \text{Sin}(15^{o})^{2} = \left(\text{Cos}(30^{o}) = \frac{\sqrt{3}}{2}\right)\right) & .4 = \left(\frac{\text{Tan}\left(\frac{2\pi}{9}\right) - \text{Tan}\left(\frac{\pi}{18}\right)}{1 + \text{Tan}\left(\frac{2\pi}{9}\right)\text{Tan}\left(\frac{\pi}{18}\right)} = \left(\text{Tan}\left(\frac{\pi}{6}\right) = \frac{\sqrt{3}}{3}\right)\right) \\ .5 = \left(1 - 2\,\text{Sin}\left(\frac{\pi}{12}\right)^{2} = \left(\text{Cos}\left(\frac{\pi}{6}\right) = \frac{\sqrt{3}}{2}\right)\right) & .6 = \left(2\,\text{Sin}(22.5^{o})\,\text{Cos}(22.5^{o}) = \left(\text{Sin}(45^{o}) = \frac{\sqrt{2}}{2}\right)\right) \\ .7 = \left(\text{Sin}\left(\frac{5\pi}{36}\right)\text{Cos}\left(\frac{\pi}{9}\right) + \text{Cos}\left(\frac{5\pi}{36}\right)\text{Sin}\left(\frac{\pi}{9}\right) = \left(\text{Sin}\left(\frac{\pi}{4}\right) = \frac{\sqrt{2}}{2}\right)\right) & .8 = \left(\frac{\text{Tan}\left(\frac{5\pi}{36}\right) + \text{Tan}\left(\frac{\pi}{36}\right)}{1 - \text{Tan}\left(\frac{5\pi}{36}\right)\text{Tan}\left(\frac{\pi}{36}\right)} = \left(\text{Tan}\left(\frac{\pi}{6}\right) = \frac{\sqrt{3}}{3}\right)\right) \\ .9 = \left(2\,\text{Cos}\left(\frac{\pi}{8}\right)^{2} - 1 = \left(\text{Cos}\left(\frac{\pi}{4}\right) = \frac{\sqrt{2}}{2}\right)\right) & .10 = (\text{Sin}(105^{o})\,\text{Cos}(15^{o}) - \text{Cos}(105^{o})\,\text{Sin}(15^{o}) = (\text{Sin}(90^{o}) = 1)) \end{bmatrix}, \quad , \begin{bmatrix} :) \\ :(\\ :) \\ :(\\ \begin{bmatrix} \begin{bmatrix} M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \end{bmatrix} \end{bmatrix} \\ :) \\ :(\\ :) \\ :(\\ :) \\ :(\end{bmatrix}$$

$$Ans3 = \begin{bmatrix} .1 = \left(\text{Sin}(\alpha) = \frac{\sqrt{11}}{6}\right) & .2 = \left(\text{Cos}(\beta) = \frac{\sqrt{21}}{5}\right) \\ .3 = \left(\text{Tan}(\alpha) = \frac{\sqrt{11}}{5}\right) & .4 = \left(\text{Sin}(\alpha - \beta) = \frac{\sqrt{21}\sqrt{11}}{30} + \frac{1}{3}\right) \\ .5 = \left(\text{Cos}(\beta - \alpha) = \frac{\sqrt{21}}{6} - \frac{\sqrt{11}}{15}\right) & .6 = \left(\text{Tan}(\alpha + \beta) = \frac{125\sqrt{11}}{481} - \frac{72\sqrt{21}}{481}\right) \\ .7 = \left(\text{Sin}(2\,\alpha) = \frac{5\sqrt{11}}{18}\right) & .8 = \left(\text{Tan}(2\,\beta) = -\frac{4\sqrt{21}}{17}\right) \end{bmatrix}, \quad , \; Ans4 = \begin{bmatrix} .1 = \left(\text{Cos}(\alpha) = -\frac{2\sqrt{6}}{7}\right) & .2 = \left(\text{Sin}(\beta) = \frac{\sqrt{21}}{5}\right) \\ .3 = \left(\text{Tan}(\alpha) = \frac{5\sqrt{6}}{12}\right) & .4 = \left(\text{Sin}(\alpha - \beta) = \frac{2}{7} + \frac{2\sqrt{6}\sqrt{21}}{35}\right) \\ .5 = \left(\text{Cos}(\alpha + \beta) = \frac{4\sqrt{6}}{35} + \frac{\sqrt{21}}{7}\right) & .6 = \left(\text{Tan}(\beta - \alpha) = \frac{98\sqrt{7}\sqrt{3}}{429} + \frac{250\sqrt{2}\sqrt{3}}{429}\right) \\ .7 = \left(\text{Sin}(2\,\beta) = -\frac{4\sqrt{21}}{25}\right) & .8 = (\text{Tan}(2\,\alpha) = -20\sqrt{6}) \end{bmatrix}, \quad , \begin{bmatrix} :) \\ :(\\ M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \\ :) \\ :(\end{bmatrix}$$

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

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

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

$$Ans2 = \begin{bmatrix} .1 = \left(\mathrm{Cos}(15^o)^2 - \mathrm{Sin}(15^o)^2 = \left(\mathrm{Cos}(30^o) = \frac{\sqrt{3}}{2}\right)\right) & .2 = \left(\mathrm{Sin}\left(\frac{17\pi}{30}\right)\mathrm{Cos}\left(\frac{\pi}{15}\right) - \mathrm{Cos}\left(\frac{17\pi}{30}\right)\mathrm{Sin}\left(\frac{\pi}{15}\right) = \left(\mathrm{Sin}\left(\frac{\pi}{2}\right) = 1\right)\right) \\ .3 = \left(\mathrm{Cos}\left(\frac{4\pi}{15}\right)\mathrm{Cos}\left(\frac{\pi}{15}\right) - \mathrm{Sin}\left(\frac{4\pi}{15}\right)\mathrm{Sin}\left(\frac{\pi}{15}\right) = \left(\mathrm{Cos}\left(\frac{\pi}{3}\right) = \frac{1}{2}\right)\right) & .4 = \left(1 - 2\,\mathrm{Sin}(22.5^o)^2 = \left(\mathrm{Cos}(45^o) = \frac{\sqrt{2}}{2}\right)\right) \\ .5 = \left(\frac{\mathrm{Tan}(20^o) + \mathrm{Tan}(10^o)}{1 - \mathrm{Tan}(20^o)\,\mathrm{Tan}(10^o)} = \left(\mathrm{Tan}(30^o) = \frac{\sqrt{3}}{3}\right)\right) & .6 = \left(\mathrm{Cos}(55^o)\,\mathrm{Cos}(10^o) + \mathrm{Sin}(55^o)\,\mathrm{Sin}(10^o) = \left(\mathrm{Cos}(45^o) = \frac{\sqrt{2}}{2}\right)\right) \\ .7 = \left(2\,\mathrm{Sin}\left(\frac{\pi}{12}\right)\mathrm{Cos}\left(\frac{\pi}{12}\right) = \left(\mathrm{Sin}\left(\frac{\pi}{6}\right) = \frac{1}{2}\right)\right) & .8 = \left(\frac{2\,\mathrm{Tan}(22.5^o)}{1 - \mathrm{Tan}(22.5^o)^2} = (\mathrm{Tan}(45^o) = 1)\right) \\ .9 = \left(2\,\mathrm{Cos}\left(\frac{\pi}{8}\right)^2 - 1 = \left(\mathrm{Cos}\left(\frac{\pi}{4}\right) = \frac{\sqrt{2}}{2}\right)\right) & .10 = \left(\mathrm{Sin}(33^o)\,\mathrm{Cos}(12^o) + \mathrm{Cos}(33^o)\,\mathrm{Sin}(12^o) = \left(\mathrm{Sin}(45^o) = \frac{\sqrt{2}}{2}\right)\right) \end{bmatrix}, \; , \begin{bmatrix} :) \\ :(\\ :) \\ :(\\ \begin{bmatrix}\begin{bmatrix} M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \end{bmatrix}\end{bmatrix} \\ :) \\ :(\\ :) \\ :(\\ :) \\ :(\end{bmatrix}$$

$$Ans3 = \begin{bmatrix} .1 = \left(\mathrm{Sin}(\alpha) = \frac{\sqrt{55}}{8}\right) & .2 = \left(\mathrm{Cos}(\beta) = \frac{\sqrt{3}}{2}\right) \\ .3 = \left(\mathrm{Tan}(\beta) = -\frac{\sqrt{3}}{3}\right) & .4 = \left(\mathrm{Sin}(\beta - \alpha) = -\frac{\sqrt{3}\sqrt{55}}{16} - \frac{3}{16}\right) \\ .5 = \left(\mathrm{Cos}(\alpha + \beta) = \frac{\sqrt{55}}{16} + \frac{3\sqrt{3}}{16}\right) & .6 = \left(\mathrm{Tan}(\alpha - \beta) = -\frac{3\sqrt{55}}{7} - \frac{16\sqrt{3}}{7}\right) \\ .7 = \left(\mathrm{Cos}(2\,\alpha) = \frac{\text{-}23}{32}\right) & .8 = (\mathrm{Tan}(2\,\beta) = -\sqrt{3}) \end{bmatrix}, \; , \; Ans4 = \begin{bmatrix} .1 = \left(\mathrm{Cos}(\alpha) = -\frac{\sqrt{5}}{3}\right) & .2 = \left(\mathrm{Sin}(\beta) = \frac{\text{-}3}{5}\right) \\ .3 = \left(\mathrm{Tan}(\beta) = \frac{3}{4}\right) & .4 = \left(\mathrm{Sin}(\alpha - \beta) = -\frac{8}{15} - \frac{\sqrt{5}}{5}\right) \\ .5 = \left(\mathrm{Cos}(\alpha + \beta) = \frac{2}{5} + \frac{4\sqrt{5}}{15}\right) & .6 = \left(\mathrm{Tan}(\beta - \alpha) = \frac{27}{11} + \frac{25\sqrt{5}}{22}\right) \\ .7 = \left(\mathrm{Cos}(2\,\beta) = \frac{7}{25}\right) & .8 = (\mathrm{Tan}(2\,\alpha) = -4\sqrt{5}) \end{bmatrix}, \; , \begin{bmatrix} :) \\ :(\\ M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \\ :) \\ :(\end{bmatrix}$$

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

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

$$Ans1 = \begin{bmatrix} .1 = \left(\mathrm{Sin}(105^{o}) = \frac{\sqrt{2}}{4} + \frac{\sqrt{2}\sqrt{3}}{4}\right) & .2 = \left(\mathrm{Cos}\left(\frac{5\pi}{12}\right) = \frac{\sqrt{2}\sqrt{3}}{4} - \frac{\sqrt{2}}{4}\right) \\ .3 = (\mathrm{Tan}(15^{o}) = 2 - \sqrt{3}) & .4 = (\mathrm{Tan}((\text{-}255)^{o}) = -2 - \sqrt{3}) \\ .5 = \left(\mathrm{Sec}\left(-\frac{\pi}{12}\right) = \sqrt{2}\sqrt{3} - \sqrt{2}\right) & .6 = \left(\mathrm{Sin}\left(-\frac{19\pi}{12}\right) = \frac{\sqrt{2}}{4} + \frac{\sqrt{2}\sqrt{3}}{4}\right) \\ .7 = (\mathrm{Csc}((\text{-}75)^{o}) = -\sqrt{2}\sqrt{3} + \sqrt{2}) & .8 = (\mathrm{Cot}(165^{o}) = -2 - \sqrt{3}) \end{bmatrix}, \begin{bmatrix} :) \\ :(\\ M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \\ :) \\ :(\end{bmatrix}$$

$$Ans2 = \begin{bmatrix} .1 = \left(\mathrm{Sin}\left(\frac{\pi}{15}\right)\mathrm{Cos}\left(\frac{\pi}{10}\right) + \mathrm{Cos}\left(\frac{\pi}{15}\right)\mathrm{Sin}\left(\frac{\pi}{10}\right) = \left(\mathrm{Sin}\left(\frac{\pi}{6}\right) = \frac{1}{2}\right)\right) & .2 = \left(\frac{2\,\mathrm{Tan}(22.5^{o})}{1 - \mathrm{Tan}(22.5^{o})^{2}} = (\mathrm{Tan}(45^{o}) = 1)\right) \\ .3 = \left(\mathrm{Sin}\left(\frac{7\pi}{12}\right)\mathrm{Cos}\left(\frac{\pi}{12}\right) - \mathrm{Cos}\left(\frac{7\pi}{12}\right)\mathrm{Sin}\left(\frac{\pi}{12}\right) = \left(\mathrm{Sin}\left(\frac{\pi}{2}\right) = 1\right)\right) & .4 = (\mathrm{Cos}(80^{o})\,\mathrm{Cos}(10^{o}) - \mathrm{Sin}(80^{o})\,\mathrm{Sin}(10^{o}) = (\mathrm{Cos}(90^{o}) = 0)) \\ .5 = \left(\mathrm{Cos}\left(\frac{\pi}{8}\right)^{2} - \mathrm{Sin}\left(\frac{\pi}{8}\right)^{2} = \left(\mathrm{Cos}\left(\frac{\pi}{4}\right) = \frac{\sqrt{2}}{2}\right)\right) & .6 = \left(\frac{\mathrm{Tan}\left(\frac{5\pi}{18}\right) - \mathrm{Tan}\left(\frac{\pi}{9}\right)}{1 + \mathrm{Tan}\left(\frac{5\pi}{18}\right)\mathrm{Tan}\left(\frac{\pi}{9}\right)} = \left(\mathrm{Tan}\left(\frac{\pi}{6}\right) = \frac{\sqrt{3}}{3}\right)\right) \\ .7 = \left(2\,\mathrm{Cos}\left(\frac{\pi}{12}\right)^{2} - 1 = \left(\mathrm{Cos}\left(\frac{\pi}{6}\right) = \frac{\sqrt{3}}{2}\right)\right) & .8 = \left(2\,\mathrm{Sin}(15^{o})\,\mathrm{Cos}(15^{o}) = \left(\mathrm{Sin}(30^{o}) = \frac{1}{2}\right)\right) \\ .9 = \left(1 - 2\,\mathrm{Sin}(22.5^{o})^{2} = \left(\mathrm{Cos}(45^{o}) = \frac{\sqrt{2}}{2}\right)\right) & .10 = \left(\mathrm{Cos}(80^{o})\,\mathrm{Cos}(20^{o}) + \mathrm{Sin}(80^{o})\,\mathrm{Sin}(20^{o}) = \left(\mathrm{Cos}(60^{o}) = \frac{1}{2}\right)\right) \end{bmatrix}, \begin{bmatrix} :) \\ :(\\ :) \\ :(\\ \begin{bmatrix}\begin{bmatrix} M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \end{bmatrix}\end{bmatrix} \\ :) \\ :(\\ :) \\ :(\\ :) \\ :(\end{bmatrix}$$

$$Ans3 = \begin{bmatrix} .1 = \left(\mathrm{Cos}(\alpha) = \frac{\sqrt{35}}{6}\right) & .2 = \left(\mathrm{Sin}(\beta) = \frac{\sqrt{33}}{7}\right) \\ .3 = \left(\mathrm{Tan}(\beta) = -\frac{\sqrt{33}}{4}\right) & .4 = \left(\mathrm{Sin}(\alpha - \beta) = -\frac{2}{21} - \frac{\sqrt{35}\sqrt{33}}{42}\right) \\ .5 = \left(\mathrm{Cos}(\alpha + \beta) = -\frac{2\sqrt{35}}{21} - \frac{\sqrt{33}}{42}\right) & .6 = \left(\mathrm{Tan}(\beta - \alpha) = -\frac{144\sqrt{33}}{527} - \frac{49\sqrt{35}}{527}\right) \\ .7 = \left(\mathrm{Sin}(2\alpha) = \frac{\sqrt{35}}{18}\right) & .8 = \left(\mathrm{Tan}(2\beta) = \frac{8\sqrt{33}}{17}\right) \end{bmatrix}, \quad Ans4 = \begin{bmatrix} .1 = \left(\mathrm{Cos}(\alpha) = -\frac{\sqrt{5}}{3}\right) & .2 = \left(\mathrm{Sin}(\beta) = -\frac{2\sqrt{6}}{5}\right) \\ .3 = (\mathrm{Tan}(\beta) = -2\sqrt{6}) & .4 = \left(\mathrm{Sin}(\alpha - \beta) = -\frac{2}{15} - \frac{2\sqrt{6}\sqrt{5}}{15}\right) \\ .5 = \left(\mathrm{Cos}(\alpha + \beta) = -\frac{\sqrt{5}}{15} - \frac{4\sqrt{6}}{15}\right) & .6 = \left(\mathrm{Tan}(\beta - \alpha) = \frac{50\sqrt{5}}{91} + \frac{18\sqrt{6}}{91}\right) \\ .7 = \left(\mathrm{Cos}(2\beta) = \frac{-23}{25}\right) & .8 = (\mathrm{Tan}(2\alpha) = 4\sqrt{5}) \end{bmatrix}, \begin{bmatrix} :) \\ :(\\ M \\ a \\ t \\ h \\ @ \\ M \\ U \\ T \\ :) \\ :(\end{bmatrix}$$

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

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

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