شهرزاد شوشتری

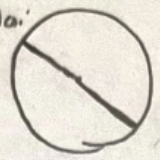
(۱

$\cot\alpha = \frac{\cos\alpha}{\sqrt{1-\cos^2\alpha}} = \frac{\cos\alpha}{|\sin\alpha|}$ ، $\frac{1}{|\cos\alpha|} - \frac{|\sin\alpha|}{\cos\alpha} = \frac{1-\sin\alpha}{|\cos\alpha|}$ $\longrightarrow \sin\alpha \to +$ ، $\cos\alpha \leftrightarrow +$

ربع اول

(۲

$\sin\gamma_k = \frac{m-1}{2} \rightarrow -\frac{\pi}{4} < \gamma_k < \frac{5\pi}{4}$



$\rightarrow -\frac{1}{2} < \frac{m-1}{2} < \frac{1}{2} \rightarrow -2 < m-1 < 2$

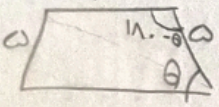
$-1 < m < 3$

$\frac{\pi}{6} < \gamma_k < \pi$

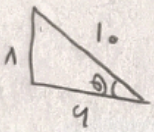
(۳

$\frac{\sin\alpha}{\cos\alpha} + \frac{\cos\alpha}{\sin\alpha} = -3$ $\quad \frac{\sin^2\alpha + \cos^2\alpha}{\sin\alpha\cos\alpha} = \frac{1}{\frac{1}{2}\sin\gamma_k} \rightarrow \frac{2}{\sin\gamma_k} = -3 \rightarrow -3\sin\gamma_k = 2 \rightarrow \sin\gamma_k = \frac{-2}{3}$

$2\sin\alpha\cos\alpha = \frac{-8}{9} \rightarrow = -\frac{1}{9}$



$\sin(180-\theta) = \sin\theta = \frac{8}{10}$ ، $\frac{4}{5} \rightarrow S = \frac{6}{5} \times 2 \times 5 \times \frac{1}{2}\sqrt{6}$



$6 \times 2 = 8$ (۴

$\tan(270+\alpha) \times (\tan(-180+\alpha) - \sin(360+\alpha) \times \cos(270-\alpha)$ (۵

$-\cot\alpha \cdot \times -\tan\alpha - \sin\alpha \times -\sin\alpha = -1 + \sin^2\alpha \rightarrow -\sin^2\alpha - \cos^2\alpha + \sin^2\alpha = -\cos^2\alpha$

$k = 1$

$\sqrt{3} \times -\frac{\sqrt{3}}{2} \times \sin(270 - 2\alpha) - \sqrt{2} \times \frac{\sqrt{2}}{2} \times \cos(180 - 2\alpha)$ (۶

$-\frac{3}{2} \times -\cos 2\alpha + \cos 2\alpha = \frac{3}{2}\cos 2\alpha + \cos 2\alpha = \frac{5}{2}\cos 2\alpha$ $\quad \frac{5}{2}$

شهرزاد شوشتری

۷)

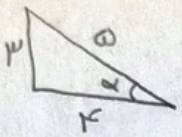
$\frac{1}{2}\sin^2(4x) \rightarrow \frac{1}{2}\sin^2(12x) \rightarrow \frac{1}{2}\sin^2(24x) \rightarrow \frac{1}{2}\sin^2(48x)$

$$f(x) = 16\cos^2(3x)\cos^2(6x)\cos^2(12x)\cos^2(24x) \times \sin^2(3x) \Big/ \sin^2(48x) =$$

$$\frac{16 \times \frac{1}{16} \times \sin^2(48x)}{\sin^2(3x)} \times \frac{\sin^2\left(\frac{15\pi}{3}\right)}{\sin^2\left(\frac{\pi}{12}\right)}$$

۸)

$4 + 4\sin x = 1 - \sin x \rightarrow 5\sin x = -3 \rightarrow \sin x = -\frac{3}{5}$



$\cos x = -\frac{4}{5}$ $\quad \tan\frac{\alpha}{2} = \frac{1+\frac{4}{5}}{-\frac{3}{5}} = \frac{\frac{9}{5}}{-\frac{3}{5}} = -3$

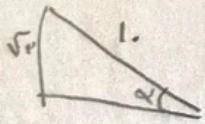
۹)

$\frac{\sin\theta}{1-\cos\theta} = \cot\frac{\alpha}{2}$ $\quad \frac{1+\cos\theta}{\sin\theta} = \cot\frac{\theta}{2} \rightarrow 2\cot\frac{\theta}{2} \rightarrow 12.2$

۱۰)

$$\cos\left(\frac{33\pi}{4} + \alpha\right) = \cos\frac{11\pi}{4} \times \cos\alpha - \sin\frac{11\pi}{4} \times \sin\alpha = -\frac{\sqrt{2}}{2} \times -\frac{\sqrt{2}}{10} - \frac{\sqrt{2}}{2} \times \frac{7\sqrt{2}}{10} =$$

$$= \frac{1}{10} - \frac{7}{10} = -\frac{6}{10} = -\frac{3}{5}$$



$\sin\alpha = \frac{\sqrt{98}}{10}$

$\cos\alpha = -\frac{\sqrt{2}}{10}$

$\cos\frac{11\pi}{4} = \cos\frac{3\pi}{4}$

$\sin\frac{11\pi}{4} = \sin\frac{3\pi}{4}$

$\sqrt{98} = 7\sqrt{2}$