

؟ α $\cot \alpha = \frac{\cos \alpha}{\sqrt{1 - \cos^2 \alpha}}$

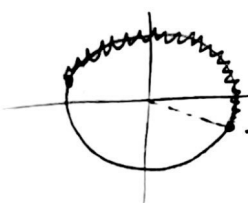
$\frac{1}{\sqrt{\cos^2 \alpha}} - \frac{1}{\cot \alpha} = \frac{1 - \sin \alpha}{|\cos \alpha|}$

$\frac{1}{\sqrt{\cos^2 \alpha}} - \frac{1}{\cot \alpha} = \frac{1 - \sin \alpha}{|\cos \alpha|} \rightarrow \frac{1}{|\cos \alpha|} - \frac{\sin \alpha}{\cos \alpha} = \frac{1 - \sin \alpha}{|\cos \alpha|}$

A, VO

$\rightarrow \frac{\cos \alpha - \sin \alpha |\cos \alpha|}{|\cos \alpha| \cos \alpha} = \frac{1 - \sin \alpha}{|\cos \alpha|} \rightarrow \cos \alpha = |\cos \alpha| \rightarrow \cos \alpha > 0$

$\rightarrow \cot \alpha = \frac{\cos \alpha}{\sqrt{1 - \cos^2 \alpha}} \rightarrow \frac{\cos \alpha}{\sin \alpha} = \frac{\cos \alpha}{|\sin \alpha|} \rightarrow \sin \alpha = |\sin \alpha| \rightarrow \sin \alpha > 0$



؟ m $\sin \Gamma m = \frac{m-1}{\epsilon}$

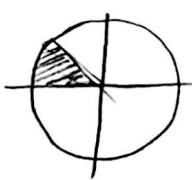
$-\frac{\pi}{2} < \alpha < \frac{\pi}{2}$

$-\frac{1}{r} = \sin \frac{1}{r}$

$-\frac{1}{r} < \frac{m-1}{\epsilon} \leq 1 \rightarrow -2 < m-1 \leq \epsilon$

$-\frac{\pi}{2} < \Gamma m < \frac{\pi}{2}$

$-1 < m \leq \epsilon$



؟ $\frac{1}{\sin^2 + \cos^2}$

$\tan \alpha + \cot \alpha = -3$

$\frac{\pi}{2} < \alpha < \pi$

$\frac{\sin \alpha + \cos \alpha}{\cos \alpha \sin \alpha}$

1, VO

$\sin^2 + \cos^2 = (\sin + \cos)^2 - 2 \sin \cos$

$\frac{1}{\sin^2 + \cos^2 + 2 \sin \cos} = \frac{1}{(\sin + \cos)^2}$

$(\sin + \cos)^2 = \frac{1}{\frac{1}{\sin^2 + \cos^2 + 2 \sin \cos}}$

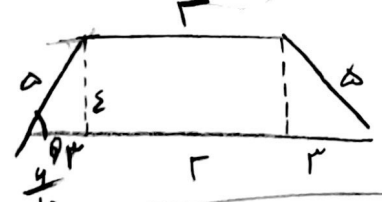
$(\frac{\sqrt{3}}{3})^2 - 2(-\frac{1}{3})(\frac{1}{\sqrt{3}})$

$\frac{\sqrt{3}}{3} + \frac{1}{\sqrt{3}}$

$\frac{\sqrt{3}}{3} + \frac{\sqrt{3}}{3} = \frac{2\sqrt{3}}{3}$

$\frac{1}{\sin^2 + \cos^2} = \frac{9}{4\sqrt{3}}$

ع در زاویه ... $\cos \theta = \frac{4}{10}$...



$\frac{1}{2} \times 2 \times (2+8) = 10$

؟ $\cos 15^\circ$ $\tan(715^\circ) \tan(-145^\circ) - \sin(1095^\circ) \cos(755^\circ)$



$u = -1$

$\tan(\pi + 15^\circ) \tan(-\pi + 15^\circ)$

$\frac{\sin(\pi + 15^\circ)}{\cos(\pi + 15^\circ)} \frac{\cos(\pi - 15^\circ)}{\sin(\pi - 15^\circ)}$

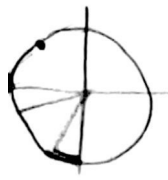
$-\cot \times \tan$

$-\frac{(\sin)(-\sin)}{\sin^2} \rightarrow \sin^2 - 1 = -\cos^2$

$$\sqrt{r} \cos(\pi/10) \sin(\pi/4) - \sqrt{r} \sin(\pi/10) \cos(\pi/4)$$

$$= \frac{-\sqrt{r}}{r} \times \sin(\pi/4 - \pi/10) - \sqrt{r} \frac{\sin(\pi/10)}{r} \cos(\pi/4)$$

$$(\sqrt{r}) \left(-\frac{\sqrt{r}}{r} \right) (-\cos \pi/4) - (\sqrt{r}) \left(\frac{\sqrt{r}}{r} \right) (-\cos \pi/4)$$



$$\frac{r}{r} \cos \pi/4 + \cos \pi/4 = \left(\frac{2}{r} \right)$$

9. $f(\pi/4)$... $f(x) = 14 \cos^7(x) \cos^7(4x) \cos^7(12x) \cos^7(20x)$

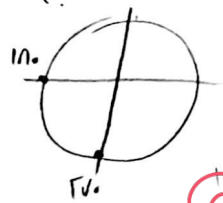
$$14 \cos^7\left(\frac{\pi}{4}\right) \times \cos^7\left(\frac{\pi}{4}\right) \times \cos^7\left(\frac{\pi}{4}\right) \times \cos^7\left(\frac{\pi}{4}\right)$$

(5)

$$\cos^7 \alpha = \frac{1 + \cos 2\alpha}{2} \rightarrow \cos^7 \frac{\pi}{4} = \frac{1 + \cos \frac{\pi}{2}}{2} \rightarrow \frac{1 + \sqrt{2}}{2}$$

$$14 \left(\frac{1 + \sqrt{2}}{2} \right) \left(\frac{1}{2} \right) \times \left(\frac{1}{2} \right) \times \left(\frac{1}{2} \right) \rightarrow \frac{7 + 7\sqrt{2}}{4}$$

10. ... $\frac{1 - \sin m}{1 + \sin m} = \epsilon$...



$$\epsilon + \sin m = 1 - \sin m \rightarrow 2 \sin m = -\epsilon \rightarrow \sin m = -\frac{\epsilon}{2}$$

$$\sin^2 \alpha = \frac{1 - \cos 2\alpha}{2} \rightarrow 1 + \frac{\epsilon}{2} = \frac{9}{10} \rightarrow \sin m = \frac{2}{\sqrt{10}}$$

$$\cos^2 \alpha = \frac{1 + \cos 2\alpha}{2} \rightarrow 1 - \frac{\epsilon}{2} = \frac{1}{10} \rightarrow \cos m = \frac{1}{\sqrt{10}}$$

$$\tan \alpha = \frac{2}{1} = 2$$

11. $\cot \theta = \frac{\cos \theta}{\sin \theta} = \frac{1 + \cos 2\theta}{\sin 2\theta}$

12. $\cos\left(\frac{11\pi}{2} + \alpha\right)$... $\sin \alpha = \frac{\sqrt{7}}{10}$...

$$\cos = \frac{\sqrt{98}}{10} = \frac{7\sqrt{2}}{10}$$



(5) (14)

$$\cos\left(\frac{11\pi}{2} + \alpha\right) = \left(\frac{\cos 11\pi}{2}\right) (\cos \alpha) - \left(\frac{\sin 11\pi}{2}\right) (\sin \alpha)$$

$$= \frac{1}{\sqrt{2}} \times \frac{7\sqrt{2}}{10} - \left(\frac{1}{\sqrt{2}}\right) \left(\frac{\sqrt{7}}{10}\right) \rightarrow \frac{7}{10} - \frac{1}{10} \left(\frac{1}{\sqrt{2}}\right)$$