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

سوال 1

$$\cot \alpha = \frac{\cos \alpha}{|\sin \alpha|} \rightarrow \sin \alpha$$

مضروب کرنا

$$\frac{1}{|\cos \alpha|} = \frac{1}{\cot \alpha} = \frac{1}{\frac{\sin \alpha}{|\cos \alpha|}} = \frac{|\cos \alpha|}{\sin \alpha}$$

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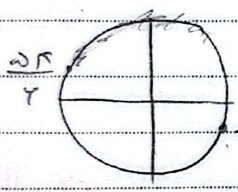
دلیل

مضروب کرنا

$$-\frac{\pi}{12} < \alpha < \frac{\omega \pi}{12} \quad \sin \alpha = \frac{m-1}{r}$$

سوال 2

$$-\frac{\pi}{4} < 2\alpha < \frac{\omega \pi}{4}$$



$$\begin{aligned} \sin \frac{\pi}{4} &= \frac{1}{\sqrt{2}} & -\frac{1}{\sqrt{2}} < \sin \alpha < 1 \\ \sin -\frac{\pi}{4} &= -\frac{1}{\sqrt{2}} & -\frac{1}{\sqrt{2}} < \frac{m-1}{r} < 1 \rightarrow -r < m-1 < r \\ \sin \frac{\omega \pi}{4} &= \frac{1}{\sqrt{2}} & -1 < m < \omega \end{aligned}$$

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$$\frac{1}{\sin \alpha + \cos \alpha} \quad \frac{\pi}{4} < \alpha < \frac{5\pi}{4} \quad \tan \alpha + \cot \alpha = -3$$

سوال 3

$$\frac{\pi}{4} < \alpha < \pi \quad \sin \alpha + \cos \alpha < 0 \quad \frac{r}{\sin \alpha} = -3 \quad \sin \alpha = -\frac{r}{3}$$

$$r \sin \alpha \cos \alpha = -\frac{r}{3}$$

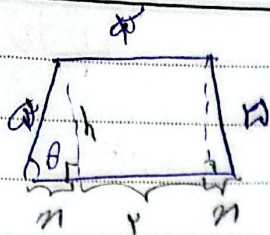
$$-\sin \alpha \cos \alpha = \frac{1}{3}$$

$$(\sin \alpha + \cos \alpha)(\sin \alpha + \cos \alpha - \sin \alpha \cos \alpha)$$

$$(\sin \alpha + \cos \alpha)^2 = \sin^2 \alpha + \cos^2 \alpha + 2 \sin \alpha \cos \alpha = 1 - \frac{2}{3} = \frac{1}{3}$$

$$\sin \alpha + \cos \alpha = -\sqrt{\frac{1}{3}} = -\frac{\sqrt{3}}{3}$$

$$-\frac{\sqrt{2}}{2} \times \frac{r}{2} = -\frac{r}{2\sqrt{2}} = -\frac{r\sqrt{2}}{4}$$



$\cos \theta = 0,4$

سوال ٤:

$\frac{m}{a} = \frac{4}{10} \rightarrow m = 4$ $2a = h + a \rightarrow h = 4$

$S = \frac{(a+b) \times h}{2} = 16$

$2 + 4 + 4 = 10$ (circled in red)

سوال ٥:

$\tan(170^\circ) \tan(-170^\circ) - \sin(109^\circ) \cos(170^\circ) = k \cos^2 10^\circ$



$\tan(\frac{17\pi}{9} + 10^\circ) \tan(-\pi + 10^\circ) - \sin(4\pi + 10^\circ) \cos(\frac{17\pi}{9} - 10^\circ)$

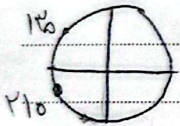
$- \cot(10^\circ) \tan(10^\circ) - \sin(10^\circ) \times - \sin(10^\circ) = -1 + \sin^2 10^\circ$

$- \cos^2 10^\circ$

$\rightarrow k = -1$

$A = \sqrt{3} \cos 41^\circ \sin 27^\circ - \sqrt{2} \sin 17^\circ \cos 10^\circ$

سوال ٦:



$\sqrt{3} \times - \frac{\sqrt{3}}{2} \times \sin(\frac{17\pi}{9} - 17^\circ) - \sqrt{2} (\frac{\sqrt{2}}{2}) \times \cos(\pi - 27^\circ)$

$-\frac{3}{2} \times - \cos 27^\circ - 1 \times - \cos 27^\circ = \frac{3 \cos 27^\circ}{2} + \cos 27^\circ$

$\cos 27^\circ (\frac{3}{2} + 1)$

$= \frac{5}{2} \cos 27^\circ$

$f(x) = 14 \cos^2(3x) \cos^2(4x) \cos^2(11x) \cos^2(27x)$

سوال ٧:

$f(\frac{\pi}{12}) = ?$ $14 \times \cos^2 \frac{\pi}{12} \times \cos^2 \frac{\pi}{6} \times \cos^2 \frac{\pi}{3} \times \cos^2 \frac{\pi}{4}$

$\cos^2 \frac{\pi}{12} = \frac{1 + \cos \frac{\pi}{6}}{2} = \frac{1 + \frac{\sqrt{3}}{2}}{2} = \frac{2 + \sqrt{3}}{4}$

Arman

$\frac{1 - \sin \alpha}{\sin \alpha + 1} = r \quad \tan \frac{\alpha}{r} = ?$ سوال 1: α پر

$\hookrightarrow r \sin \alpha + r = 1 - \sin \alpha$

$r \sin \alpha = -r$

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

$\cos \alpha = -\frac{r}{1}$

$\tan \frac{\alpha}{r} = \frac{1 - \cos \alpha}{1 + \cos \alpha}$

$\frac{1 + \frac{r}{1}}{1 - \frac{r}{1}} = \frac{1}{\frac{1}{1}} \cdot \frac{1}{1}$

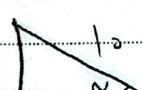
$\tan \frac{\alpha}{r} = -r$

پھر α پر $\tan \frac{\alpha}{r} = -r$

$\frac{\sin \theta}{1 - \cos \theta} + \frac{1 + \cos \theta}{\sin \theta} = k \cot \frac{\theta}{r} \quad k = ?$ سوال 4: θ پر

$\hookrightarrow \cot \frac{\theta}{r} + \cot \frac{\theta}{r} = k \cot \frac{\theta}{r} = k \cot \frac{\theta}{r}$

$\hookrightarrow k = 2$

$\sin \alpha = \frac{\sqrt{r}}{10}$ $\hookrightarrow \sqrt{r}$ 

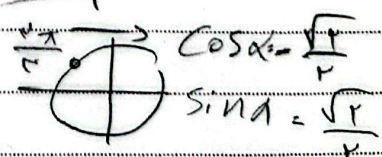
سوال 10: α پر

$\cos(\frac{11\pi}{r} + \alpha) = ?$ $n \rightarrow 100 = r + n^2 \rightarrow n = \sqrt{9r} = 3\sqrt{r}$

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

$\hookrightarrow \frac{r\pi}{r} + \frac{r\pi}{r} + \alpha \quad \cos(\frac{r\pi}{r} + \alpha) = \cos \frac{r\pi}{r} \cos \alpha - \sin \frac{r\pi}{r} \sin \alpha$

$-\frac{\sqrt{r}}{r} \times -\frac{\sqrt{r}}{10} - \frac{\sqrt{r}}{10} \times \frac{\sqrt{r}}{r} = +\frac{r}{10} - \frac{r}{10}$



\sqrt{r}

$\frac{4}{10}$