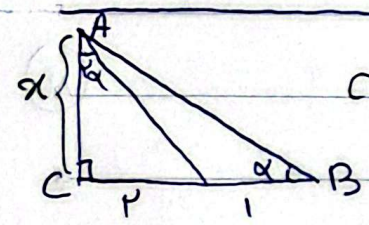
پاسخ تشریحی

$S_{ABC} = \frac{1}{2} \times 4 \times \sqrt{3} \times \sin\alpha = 4/0 \rightarrow \sin\alpha = \frac{\sqrt{3}}{2}$ (۱)

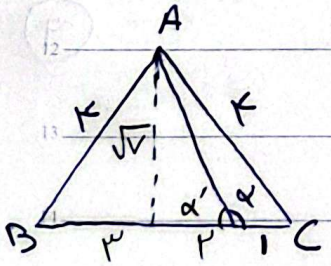
$\alpha = \begin{cases} 60^\circ \\ 120^\circ \end{cases} \Rightarrow \frac{120}{60} = 2$ برابر

$\tan(\alpha + 45) = \frac{\tan\alpha + 1}{1 - \tan\alpha} = 2 \rightarrow \tan\alpha = \frac{1}{3} \Rightarrow \cot\alpha = 3$ (۲)



$\cot\alpha = \frac{3}{x}$ $\quad \cot 2\alpha = \frac{\cot^2\alpha - 1}{2\cot\alpha} = \frac{(\frac{3}{x})^2 - 1}{2 \times \frac{3}{x}} = \frac{x}{2}$ (۳)

$9 - x^2 = 4x^2 \rightarrow x = \frac{3}{2} \rightarrow \cot\alpha = \frac{3}{\frac{3}{2}} = 2$



$\tan\alpha = -\tan\alpha' = -\frac{\sqrt{7}}{3}$ (۴)

$\sin^2 x + \sin^2 x + \cos^2 x = \frac{4}{3} \rightarrow \sin^2 x = \frac{1}{3} \Rightarrow \cos^2 x = \frac{2}{3}$ (۵)

$\tan^2 x = \frac{1}{\cos^2 x} - 1 = \frac{3}{2} - 1 = \frac{1}{2}$

$(2-\sin\alpha)^2 \quad (2-\cos^2\alpha)^2$

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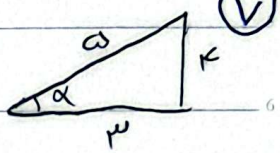
SUBJECT

Year: Month: Day:

$$\frac{\sin^4\alpha - 4\sin^2\alpha + 4}{2-\sin^2\alpha} - \frac{\cos^4\alpha - 4\cos^2\alpha + 4}{2-\cos^2\alpha} = 2 - \sin^2\alpha - 2 + \cos^2\alpha = \cos 2\alpha \quad (4)$$

$$\sin\left(\frac{\pi}{2}+\alpha\right)\cos\left(\frac{3\pi}{2}-\alpha\right) - \tan\left(-\frac{3\pi}{2}+\alpha\right) =$$

$$\cos\alpha(-\sin\alpha) + \cot\alpha = -\frac{12}{25} + \frac{3}{4} = \frac{27}{100} \quad (5)$$



$$2\cos\left(\frac{\pi}{3}\right) + \sqrt{2}\sin\frac{\pi}{12} - \sqrt{2}\cos\frac{\pi}{12} =$$

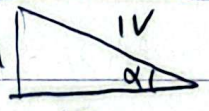
$$\frac{3}{2} + \frac{\sqrt{3}}{2} - \frac{1}{2} - \frac{1}{2} - \frac{\sqrt{3}}{2} = \frac{1}{2}$$

$$\sqrt{2}\sin\left(\frac{\pi}{3}-\frac{\pi}{4}\right) = \sin\frac{\pi}{3} - \cos\frac{\pi}{3} \quad (6)$$

$$\sqrt{2}\cos\frac{\pi}{12} = \sqrt{2}\sin\frac{5\pi}{12} = \rightarrow$$

$$\rightarrow \sin\frac{\pi}{4} + \cos\frac{\pi}{4}$$

$$\tan\alpha = \tan\left(\frac{\alpha}{2}+\frac{\alpha}{2}\right) = \frac{\frac{1}{2}+\frac{1}{2}}{1-\frac{1}{14}} = \frac{1}{13} \quad (7)$$



$$\sin\alpha = \frac{1}{12} \qquad \cos = \frac{13}{12}$$

$$\frac{\frac{1}{13} - \frac{1}{12}}{\frac{1}{12} - \frac{13}{12}} = -\frac{14}{100}$$

$$2\sin\alpha < 2\sin\alpha\cos\alpha \rightarrow \sin\alpha > 0 \rightarrow \cos > 1 \quad \text{غ غ غ} \quad (10)$$

$$\hookrightarrow \sin\alpha < 0 \rightarrow \cos < 1 \checkmark \Rightarrow \sin\alpha < 0$$

$$\frac{\cos\alpha}{\sin^2\alpha} > 0 \rightarrow \cos\alpha > 0$$

$$\therefore$$

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