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یکتا نیرم

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$S_{\overset{\Delta}{ABC}} = \frac{1}{2} \times 6 \times \sqrt{3} \times \sin\alpha = 4/5 \rightarrow \sin\alpha = \frac{\sqrt{3}}{2}$

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

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

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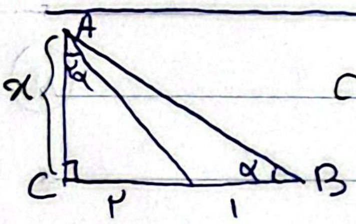
(۳)



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

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

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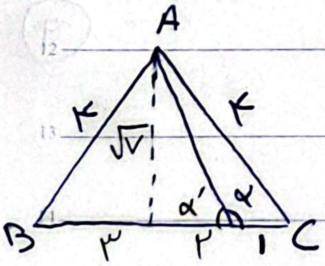

$\tan\alpha = -\tan\alpha' = -\frac{\sqrt{7}}{2}$

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

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

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

$$\cos 2\alpha$$

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

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

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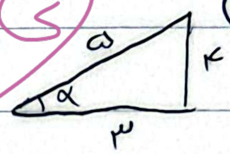

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$$2\cos\left(\frac{\pi}{3}\right)+\sqrt{2}\sin\frac{\pi}{12}-\sqrt{2}\cos\frac{\pi}{12}=$$

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

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

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

$$\rightarrow\sin\frac{\pi}{6}+\cos\frac{\pi}{6}$$

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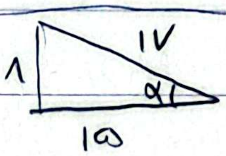
$$\tan\alpha=\tan\left(\frac{\alpha}{2}+\frac{\alpha}{2}\right)=\frac{\frac{1}{4}+\frac{1}{4}}{1-\frac{1}{16}}=\frac{8}{15}$$



$$\sin\alpha=\frac{8}{17}\qquad \cos=\frac{15}{17}$$

$$\frac{\frac{8}{15}-\frac{8}{17}}{\frac{8}{17}-\frac{15}{17}}=-\frac{16}{105}$$

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$$2\sin\alpha<2\sin\alpha\cos\alpha\rightarrow$$ $\sin\alpha>0\Rightarrow\cos>1$ غلط

↳ $\sin\alpha<0\rightarrow\cos<1$ ✓ $\Rightarrow\sin\alpha<0$

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

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