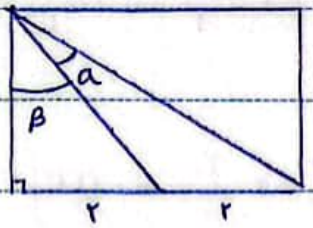
آزمون آزمایشی تألیف شماره ۲۷ پایه یازدهم رشته A

$S = \frac{1}{2} \times \sqrt{3} \times 4 \times \sin\alpha = 4\sqrt{3} \rightarrow \sin\alpha = \frac{4\sqrt{3}}{3\sqrt{3}} \times \frac{\sqrt{3}}{\sqrt{3}} = \frac{\sqrt{3}}{2} \rightarrow \alpha = 60^\circ \text{ یا } \alpha = 120^\circ$ ـ ۱

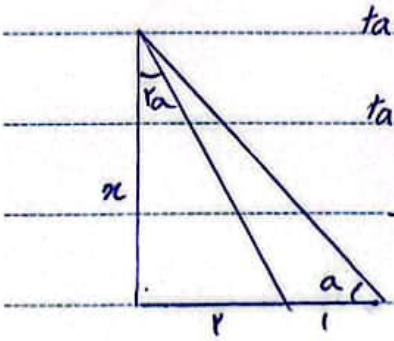
$\rightarrow \frac{120}{60} = 2$



$\tan\beta = \frac{2}{2} = 1 \quad \tan(\alpha+\beta) = \frac{4}{2} = 2$ ـ ۲

$\tan\alpha = \tan((\alpha+\beta)-\beta) = \frac{\tan(\alpha+\beta)-\tan\beta}{1+\tan(\alpha+\beta)\tan\beta} = \frac{2-1}{1+(2\times1)} = \frac{1}{3}$

$\rightarrow \cot\alpha = 3$

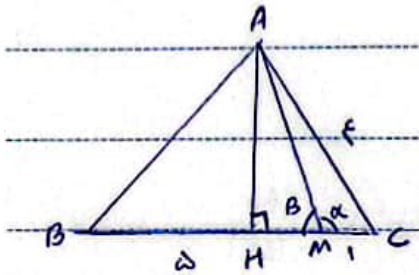


$\tan\alpha = \frac{x}{3} \quad \tan 2\alpha = \frac{2}{x}$ ـ ۳

$\tan 2\alpha = \frac{2\tan\alpha}{1-\tan^2\alpha} \rightarrow \frac{2}{x} = \frac{\frac{2x}{3}}{1-\frac{x^2}{9}} \rightarrow \frac{2}{x} = \frac{6x}{9-x^2}$

$\rightarrow 6x^2 = 18 - 2x^2 \rightarrow 8x^2 = 18 \rightarrow x^2 = \frac{9}{4} \rightarrow x = \frac{3}{2}$

$\tan\alpha = \frac{x}{3} = \frac{1}{2} \rightarrow \cot\alpha = 2$



$HC = \frac{9}{2} = 3 \rightarrow HM = 2$ ـ ۴

$AH^2 + HC^2 = 14 \rightarrow AH^2 + 9 = 14 \rightarrow AH = \sqrt{5}$

$\tan\beta = \frac{AH}{HM} = \frac{\sqrt{5}}{2} \quad \tan\alpha = \tan(180-\beta) = -\tan\beta = \frac{-\sqrt{5}}{2}$

$\sin^2 x + \overbrace{\sin^2 x + \cos^2 x}^{1} = \frac{4}{3} \rightarrow \sin^2 x = \frac{1}{3}, \cos^2 x = \frac{2}{3}$ ـ ۵

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

Subject. Day. Month. Year.

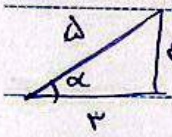
$$\frac{\sin^4\alpha+4(1-\sin^2\alpha)}{1+\cos^2\alpha}-\frac{\cos^4\alpha+4(1-\cos^2\alpha)}{1+\sin^2\alpha}=\frac{(\sin^2\alpha-2)^2}{1+\cos^2\alpha}-\frac{(\cos^2\alpha-2)^2}{1+\sin^2\alpha}$$ -۶

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

-۷

$\sin\left(\frac{9\pi}{2}+a\right)$ فرد $\quad \cos\left(\frac{7\pi}{2}-a\right)$ فرد $\quad -\tan\left(a-\frac{3\pi}{2}\right)=\tan\left(\frac{3\pi}{2}-a\right)$ فرد!

$$\rightarrow \cos a(-\sin a)+\cot a \rightarrow \left(-\frac{3}{5}\right)\left(\frac{4}{5}\right)+\frac{3}{4}=\frac{-12}{25}+\frac{3}{4}=\frac{27}{100}=0.27$$



$\tan\alpha=\frac{4}{3}$

$$3\cos 4x+2\left(\frac{\sqrt{2}}{2}\sin x-\frac{\sqrt{2}}{2}\cos x\right)=3\cos 4x+2\sin\left(x-\frac{\pi}{4}\right)$$ -۸

$$=3\cos\frac{\pi}{3}+2\sin\left(-\frac{\pi}{6}\right)=3\left(\frac{1}{2}\right)-2\left(\frac{1}{2}\right)=\frac{1}{2}$$

$$\tan a=\frac{2\tan\frac{a}{2}}{1-\tan^2\frac{a}{2}}=\frac{\frac{1}{2}}{1-\frac{1}{16}}=\frac{8}{15} \qquad \sin a=\frac{2\tan\frac{a}{2}}{1+\tan^2\frac{a}{2}}=\frac{\frac{1}{2}}{1+\frac{1}{16}}=\frac{8}{17}\rightarrow \cos a=\sqrt{1-\sin^2 a}=\frac{15}{17}$$ -۹

$$\frac{\tan a-\sin a}{\sin a-\cos a}=\frac{\frac{8}{15}-\frac{8}{17}}{\frac{8}{17}-\frac{15}{17}}=\frac{\frac{144-120}{255}}{\frac{-7}{17}}=\frac{24\times 17}{-7\times 255}=-\frac{24}{105}$$

$$2\sin a<2\sin a\cos a \rightarrow \sin a-\sin a\cos a<0 \rightarrow \sin a\underbrace{(1-\cos a)}_{+}<0$$ -۱۰

$\rightarrow \sin a<0$

$$\frac{\cot a}{\sin a}>0 \rightarrow \cot a<0 \rightarrow \frac{\cos a}{\sin a}<0 \rightarrow \cos a>0$$

فرد!