نام و نام خانوادگی ....علی صفری.... پاسخنامه تشریحی تکلیف شماره ...۲۷... کلاس ...یازدهم تجربی A...

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$S=\frac{1}{2}ab\sin\alpha \Rightarrow 4{,}5=\frac{1}{2}\sqrt{3}\times 6\times\sin\alpha \rightarrow \sin\alpha=\frac{\sqrt{3}}{2}$

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

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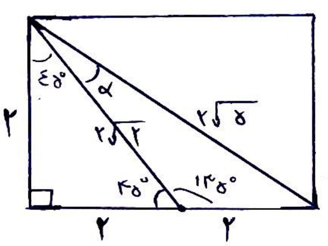
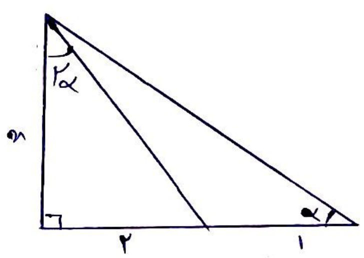


$\frac{2\sqrt{5}}{\sin 135^\circ}=\frac{2}{\sin\alpha} \rightarrow \frac{2\sqrt{5}}{\frac{\sqrt{2}}{2}}=\frac{2}{\sin\alpha} \rightarrow \sin\alpha=\frac{1}{\sqrt{10}}$

$\rightarrow 1+\cot^2=\frac{1}{\sin^2} \rightarrow 1+\cot^2=10 \rightarrow \cot^2=9$

$\rightarrow \cot\alpha=3$

۳

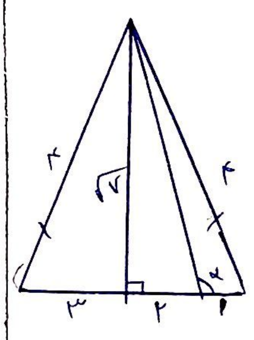


$\tan 2\alpha=\frac{2}{x} \qquad \tan\alpha=\frac{x}{3}$

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

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

۴



$\tan(180-\alpha)=-\tan\alpha=\frac{\sqrt{7}}{2} \rightarrow \tan\alpha=\frac{-\sqrt{7}}{2}$

۵

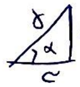
$2\sin^2\alpha+\cos^2\alpha=1+\sin^2\alpha=\frac{4}{3} \rightarrow \sin^2\alpha=\frac{1}{3} \rightarrow 1-\sin^2\alpha=\cos^2\alpha=\frac{2}{3}$

$\rightarrow \tan^2\alpha=\frac{\sin^2\alpha}{\cos^2\alpha}=\frac{1}{2}$

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

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

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

$\tan\alpha=\frac{4}{3}\longrightarrow$  $\xrightarrow{\text{در ربع سوم } \alpha}\begin{cases}\sin\alpha=\frac{-4}{5}\\ \cos\alpha=\frac{-3}{5}\end{cases}\quad \cot\alpha=\frac{3}{4}$

$$\longrightarrow \sin\left(\frac{9\pi}{2}+\alpha\right)\cos\left(\frac{7\pi}{2}-\alpha\right)-\tan\left(\alpha-\frac{3\pi}{2}\right)=(\cos\alpha)(-\sin\alpha)-(-\cot\alpha)$$ ۷

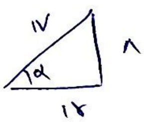
$$=\left(\frac{-3}{5}\right)\left(\frac{4}{5}\right)+\frac{3}{4}=\frac{-12}{25}+\frac{3}{4}=\frac{75-48}{100}=\frac{27}{100}$$

$$3\cos 4x+\sqrt{2}\sin x-\sqrt{2}\cos x \Longrightarrow x=\frac{\pi}{12}\rightarrow 3\cos\frac{\pi}{3}-\sqrt{(\sqrt{2}\sin x-\sqrt{2}\cos x)^2}$$

$$=\frac{3}{2}-\sqrt{2\sin^2x+2\cos^2x-4\sin x\cos x}=\frac{3}{2}-\sqrt{2-2\sin 2\alpha}=\frac{3}{2}-\sqrt{2-2\sin\frac{\pi}{6}}$$ ۸

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

$\sqrt{2}\sin x-\sqrt{2}\cos x<0$ چون

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

$$\longrightarrow \sin\alpha=\frac{8}{17},\quad \cos\alpha=\frac{15}{17}$$ ۹

$$\frac{\tan\alpha-\sin\alpha}{\sin\alpha-\cos\alpha}=\frac{\frac{8}{15}-\frac{8}{17}}{\frac{8}{17}-\frac{15}{17}}=\frac{\frac{16}{15\times 17}}{\frac{-7}{17}}=-\frac{16}{105}$$

$$0<\frac{\cot\alpha}{\sin\alpha}\rightarrow 0<\frac{\cos x}{\sin^2 x}\rightarrow \cos x>0 \qquad 2\sin\alpha<2\sin\alpha\cos\alpha\rightarrow 2\sin\alpha(\cos\alpha-1)>0$$

$$\xrightarrow{\cos\alpha-1<0}\sin\alpha<0\longrightarrow\begin{cases}\cos\alpha>0\\ \sin\alpha<0\end{cases}\longrightarrow$$ ربع چهارم ۱۰