نام و نام خانوادگی ...علی ملامیان... پاسخنامه تشریحی تکلیف شماره ...۲۷... کلاس ...یازدهم ریاضی ۸...

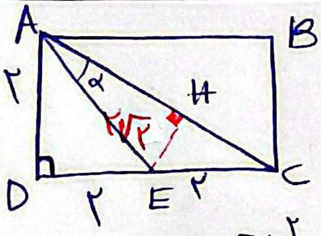
۱

$S=4/5$

$S=\frac{1}{2}ab\sin\alpha=4/5 \rightarrow \frac{\cancel{6}^{3}}{\cancel{2}}\times\sqrt{3}\times\sin\alpha=4/5 \xrightarrow{1/5} \sin\alpha=\frac{\sqrt{3}}{2}$

$\Rightarrow \sin\alpha=\frac{\sqrt{3}}{2}\begin{cases}\theta=60\\ \theta=120\end{cases} \rightarrow \frac{120}{60}=2$

۲



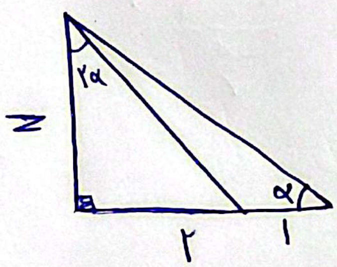
$AC=\sqrt{4^2+2^2}=2\sqrt{5}$

$\rightarrow S_{A\hat{D}E}\ (\text{هم ارتفاع}) = S_{AEC} \rightarrow \frac{2\sqrt{5}\times EH}{2}=\frac{2\times 2}{2} \rightarrow EH=\frac{2}{\sqrt{5}}$

$EH^2+AH^2=AE^2 \rightarrow \frac{4}{5}+AH^2=8 \rightarrow AH=\frac{6}{\sqrt{5}} \rightarrow \cot\alpha=\frac{AH}{EH}$

$=\frac{\frac{6}{\sqrt{5}}}{\frac{2}{\sqrt{5}}}=3$

۳



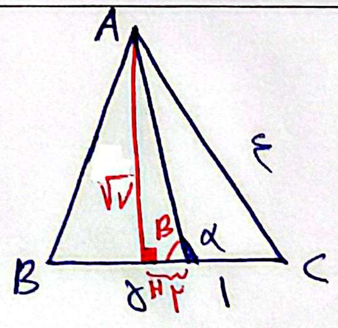
$\tan\alpha=\frac{z}{3}$ و $\tan 2\alpha=\frac{2}{z}$

$\rightarrow \tan 2\alpha=\frac{2\tan\alpha}{1-\tan^2\alpha} \Rightarrow \frac{2}{z}=\frac{\frac{2z}{3}}{1-\frac{z^2}{9}} \rightarrow \frac{\cancel{2}^{1}}{z}=\frac{\frac{\cancel{2}z}{3}}{\frac{9-z^2}{\cancel{9}_{3}}}$

$\rightarrow \frac{1}{z}=\frac{3z}{9-z^2} \rightarrow 3z^2=9-z^2 \rightarrow 4z^2=9 \rightarrow z=\frac{3}{2}$

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

۴



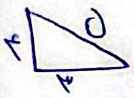
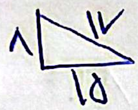
$AH=\sqrt{16-9}=\sqrt{7}$

$\tan\alpha=-\tan\beta \Rightarrow \tan\beta=\frac{\sqrt{7}}{2} \rightarrow \tan\alpha=-\frac{\sqrt{7}}{2}$

۵

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

$\Rightarrow \tan^2x=\frac{\sin^2x}{\cos^2x}=\frac{\frac{1}{\cancel{3}}}{\frac{2}{\cancel{3}}}=\frac{1}{2}$

$\sin(\frac{۹\pi}{۲}+\alpha)\cos(\frac{۷\pi}{۲}-\alpha)-\tan(\alpha-\frac{۳\pi}{۲}) = \cos\alpha(-\sin\alpha)+\tan(\frac{۳\pi}{۲}-\alpha)$ $= -\sin\alpha\cos\alpha+\cot\alpha = -(-\frac{۴}{۵})(-\frac{۳}{۵})+\frac{۳}{۴} = \frac{۴۸+۷۵}{۱۰۰} = \frac{۱۲۳}{۱۰۰} = ۱/۲۳$  $\tan x = \frac{۴}{۳}$ $\sin x = -\frac{۴}{۵}$ $\cos x = -\frac{۳}{۵}$	۷
$\frac{\sin^۴\alpha+۴(۱-\sin^۲\alpha)}{۱+۱-\sin^۲\alpha} - \frac{\cos^۴\alpha+۴(۱-\cos^۲\alpha)}{۱+۱-\cos^۲\alpha} = \frac{\sin^۴\alpha-۴\sin^۲\alpha+۴}{۲-\sin^۲\alpha}-\frac{\cos^۴\alpha-۴\cos^۲\alpha+۴}{۲-\cos^۲\alpha}$ $=\frac{(۲-\sin^۲\alpha)^{\cancel{۲}}}{\cancel{۲-\sin^۲\alpha}}-\frac{(۲-\cos^۲\alpha)^{\cancel{۲}}}{\cancel{۲-\cos^۲\alpha}} = \cancel{۲}-\sin^۲\alpha\cancel{-۲}+\cos^۲\alpha = \cos^۲\alpha-\sin^۲\alpha$ $= \cos۲\alpha$	۶
$۳\cos\frac{\pi}{۳}+\sqrt{۲}(\sin x-\cos x) = ۳\cos\frac{\pi}{۳}+\sqrt{۲}(\sqrt{۲}\sin(\underbrace{\frac{\pi}{۱۲}-\frac{\pi}{۴}}_{-\frac{\pi}{۶}}))$ $=(۳\times\frac{۱}{۲})+۲(-\frac{۱}{۲}) = \frac{۳}{۲}-۱ = \frac{۱}{۲}$	۸
$\tan۲x = \frac{۲\tan x}{۱-\tan^۲x} \xRightarrow{x=\frac{\alpha}{۲}} \tan\alpha = \frac{\frac{۱}{۲}}{\frac{۱۵}{۱۶}} = \frac{۸}{۱۵}$  $\left.\begin{array}{l}\tan\alpha=\frac{۸}{۱۵}\\ \sin\alpha=\frac{۸}{۱۷}\\ \cos\alpha=\frac{۱۵}{۱۷}\end{array}\right\} \Rightarrow \frac{\frac{۸}{۱۵}-\frac{۸}{۱۷}}{\frac{۸}{۱۷}-\frac{۱۵}{۱۷}} = \frac{\frac{+۱۶}{۲۵۵}}{\frac{-۷}{\cancel{۱۷}}} = \frac{-۱۶}{۱۰۵}$	۹
$\cancel{۲\sin\alpha} < ۲\sin\alpha\cos\alpha \Rightarrow ۲\sin\alpha\cos\alpha-۲\sin\alpha>۰ \to \underbrace{۲\sin\alpha}_{\ominus}(\underbrace{\cos\alpha-۱}_{\ominus})>۰$ $\frac{\cot\alpha}{\sin\alpha}>۰ \to \frac{\cos\alpha}{\sin^۲\alpha}>۰ \to \cos\alpha>۰ \quad , \sin\alpha<۰$ $\Rightarrow$ ۴ ن‌م	۱۰