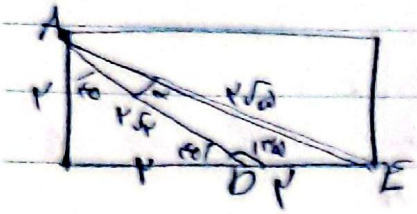
$\frac{1}{2}\sin\alpha \times \sqrt{10} \times 4 = \frac{9}{2} \rightarrow \sin\alpha = \frac{\sqrt{10}}{4} = \frac{3}{2\sqrt{2}}$ ... ۱

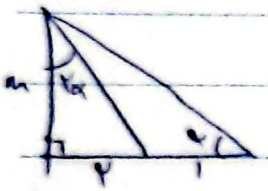
$\frac{120}{60} = 2$ برابر ۲



$S_{AED} = \frac{1}{2} \times \sin\alpha \times 2\sqrt{2} \times 2\sqrt{2} = \frac{1}{2}\sin\alpha \times 4 \times 2$ ۲

$\sin\alpha = \frac{1}{\sqrt{10}}$

$\cot\alpha = 3$



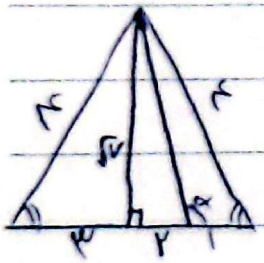
$\cot 2\alpha = \frac{1-\tan^2\alpha}{2\tan\alpha}$ $\quad \tan\alpha = \frac{x}{3}$

$\frac{x}{2} = \frac{1-\frac{x^2}{9}}{\frac{2x}{3}} \rightarrow 2x^2 = 9$ ... ۳

$x = \frac{3}{2}$

$\tan\alpha = \frac{x}{3}$, $\cot\alpha = \frac{3}{x}$

$\cot\alpha = 2$ ۴



$\tan(\pi-\alpha) = \frac{\sqrt{7}}{2} \rightarrow \tan\alpha = -\frac{\sqrt{7}}{2}$ ... ۵

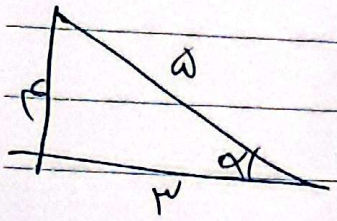
$\sin^2\alpha = \frac{1}{3} \rightarrow \cos^2\alpha = \frac{2}{3}$ $\quad \tan^2\alpha = \frac{\frac{1}{3}}{\frac{2}{3}} = \frac{1}{2}$ ۶

$\sin^2\alpha = 1-\cos^2\alpha$ $\quad \frac{(1-\cos^2\alpha)^2 + 4\cos^2\alpha}{1+\cos^2\alpha} - \frac{(1-\sin^2\alpha)^2 + 4\sin^2\alpha}{1+\sin^2\alpha}$ ... ۷

$= \frac{1+\cos^4\alpha + 2\cos^2\alpha}{1+\cos^2\alpha} - \frac{1+\sin^4\alpha + 2\sin^2\alpha}{1+\sin^2\alpha} = \cos^2\alpha - \sin^2\alpha = \cos 2\alpha$ ۸

Year Month Date ( )

Subject



۷- $\sin\left(\frac{9\pi}{2}+\alpha\right)\cos\left(\frac{5\pi}{2}-\alpha\right)-\tan\left(\alpha-\frac{3\pi}{2}\right)$

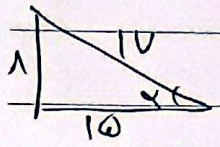
$\cos\alpha \quad -\sin\alpha \quad +\cot\alpha$

$= \frac{-4\times 3}{5\times 5}+\frac{3}{4}=\frac{27}{100}=0/27$

۸- $3\cos\frac{\pi}{3}+\sqrt{2}\left(\frac{\sin x-\cos x}{\sqrt{2}\sin\left(x-\frac{\pi}{4}\right)}\right)=\frac{3}{2}+\frac{-\sqrt{2}\times\sqrt{2}}{2}=\frac{1}{2}$

$\sin\left(\frac{5\pi}{12}-\frac{3\pi}{4}\right)=\sin\left(-\frac{\pi}{6}\right)=-\frac{1}{2}$

۹- $\tan\alpha=\frac{2\tan\left(\frac{\alpha}{2}\right)}{1-\tan^2\left(\frac{\alpha}{2}\right)} \longrightarrow \tan\alpha=\frac{\frac{1}{2}}{1-\frac{1}{19}}=\frac{1}{10}$



$\frac{\frac{1}{15}-\frac{1}{17}}{\frac{1}{17}-\frac{1}{15}}=\frac{\frac{8\times 17-1\times 15}{15\times 17}}{\frac{-2}{17}}=\frac{-17\times 19}{17\times 15\times 2}=\frac{-19}{150}$

۱۰- $2\sin\alpha<2\sin x\cos x \xrightarrow{\cos x<1} \sin\alpha<0$

$\Rightarrow$ غیرممکن

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