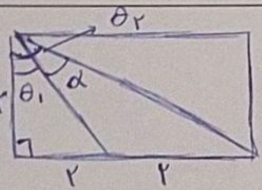
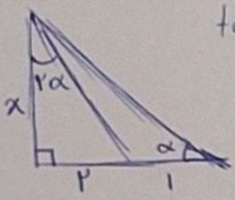
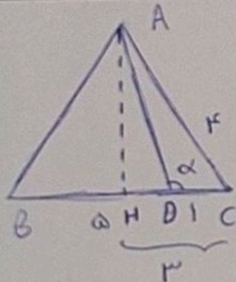
نام و نام خانوادگی ...شهناز الیاسی... پاسخنامه تشریحی تکلیف شماره ...۲۷... کلاس ...یازدهم دختر B...

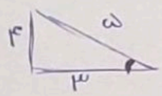
$S=\frac{1}{2}ab\sin\alpha \quad 4{,}5=\frac{1}{2}(\sqrt{3})(6)\sin\alpha \quad \sin\alpha=\frac{4{,}5}{3\sqrt{3}}=\frac{\sqrt{3}}{2} \quad \alpha=120^\circ$ یا 60° $\frac{120^\circ}{60^\circ}=\boxed{2}$	۱
 $\tan\theta_1=\frac{2}{2}=1 \quad \tan\theta_2=\frac{2}{4}=\frac{1}{2}$ $\underbrace{\tan(\alpha)}_{\theta_1-\theta_2}=\frac{\tan\theta_1-\tan\theta_2}{1+\tan\theta_1\tan\theta_2}\to\frac{1-\frac{1}{2}}{1+\frac{1}{2}}=\frac{\frac{1}{2}}{\frac{3}{2}}=\frac{1}{3}$ $\cot\alpha=\frac{1}{\tan\alpha}=\boxed{3}$	۲
 $\tan\alpha=\frac{x}{3} \quad \tan 2\alpha=\frac{2}{x}$ $\tan 2\alpha=\frac{2\tan\alpha}{1-\tan^2\alpha}\longrightarrow\frac{\frac{2x}{3}}{1-\frac{x^2}{9}}\to\frac{6x}{9-x^2}=\frac{2}{x} \quad 3x^2=9-x^2$ $x^2=\frac{9}{4} \quad x=\frac{3}{2}$ $\cot\alpha=\frac{3}{x}=\boxed{2}$	۳
 $AH^2=AC^2-CH^2\longrightarrow 4^2-3^2=7 \quad AH=\sqrt{7}$ $\tan\alpha=\frac{AH}{DH}=\boxed{\frac{\sqrt{7}}{2}}$ $\alpha=A\hat{D}H$	۴
$2\sin^2x+\cos^2x=\frac{4}{3}\xrightarrow{\sin^2x=1-\cos^2x}2-2\cos^2x+\cos^2x=\frac{4}{3}$ $\cos^2x=\frac{2}{3} \quad \cos x=\sqrt{\frac{2}{3}} \quad \sin x=\sqrt{1-\frac{2}{3}}=\frac{1}{\sqrt{2}}$ $\tan^2x=\frac{\sin^2x}{\cos^2x}=\frac{\left(\frac{1}{\sqrt{2}}\right)^2}{\left(\sqrt{\frac{2}{3}}\right)^2}=\frac{\frac{1}{2}}{\frac{2}{3}}=\boxed{\frac{3}{4}}$	۵

$$\frac{\sin^4\alpha+4\cos^2\alpha}{1+\cos^2\alpha}-\frac{\cos^4\alpha+4\sin^2\alpha}{1+\sin^2\alpha}\xrightarrow[\cos^2\alpha=1-\sin^2\alpha]{\sin^2\alpha=1-\cos^2\alpha}\frac{1-2\cos^2\alpha+\cos^4\alpha+4\cos^2\alpha}{1+\cos^2\alpha}-$$

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

$$\to 1+\cos^2\alpha-1-\sin^2\alpha=\cos^2\alpha-\sin^2\alpha\xrightarrow{\cos2\alpha=\cos^2\alpha-\sin^2\alpha}\boxed{\cos2\alpha}$$

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

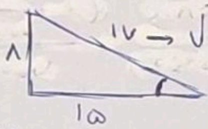
$\tan\alpha=\frac{4}{3}\xrightarrow[\text{ربع سوم}]{}$  $\sin\alpha=-\frac{4}{5}$ $\cos\alpha=-\frac{3}{5}$ $\cot\alpha=\frac{3}{4}$

$$\to\Big(\underbrace{-\frac{3}{5}\times-\left(-\frac{4}{5}\right)}_{-\frac{12}{25}}\Big)-\frac{3}{4}=\frac{-123}{100}$$ ۷

$$3\cos4x+\sqrt{2}\sin x-\sqrt{2}\cos x\xrightarrow{x=\frac{\pi}{12}}\underbrace{3\cos\frac{\pi}{3}}_{3\times\frac{1}{2}=\frac{3}{2}}+\sqrt{2}\sin\frac{\pi}{12}-\sqrt{2}\cos\frac{\pi}{12}\to$$

$$\frac{3}{2}+\sqrt{2}\left(\sin\frac{\pi}{12}-\cos\frac{\pi}{12}\right)=\frac{3}{2}+\sqrt{2}\Big(\sqrt{2}\sin\big(\underbrace{\frac{\pi}{12}-\frac{\pi}{4}}_{-\frac{\pi}{6}}\big)\Big)=\frac{3}{2}+\sqrt{2}\Big(\sqrt{2}\underbrace{\sin\left(-\frac{\pi}{6}\right)}_{-\frac{1}{2}}\Big)$$ ۸

$$\to\frac{3}{2}+\sqrt{2}\left(\frac{-\sqrt{2}}{2}\right)\to\frac{3}{2}-1=\boxed{\frac{1}{2}}$$

$$\tan\left(\frac{\alpha}{2}\right)=\frac{1}{4}\to\tan\alpha=\frac{2\tan\left(\frac{\alpha}{2}\right)}{1-\tan^2\left(\frac{\alpha}{2}\right)}=\frac{2\times\frac{1}{4}}{1-\frac{1}{16}}=\frac{8}{15}$$  $17\to\sqrt{8^2+15^2}=\sqrt{289}=17$

$\to$ $\sin\alpha=\frac{8}{17}$, $\cos\alpha=\frac{15}{17}$, $\tan\alpha=\frac{8}{15}$

$$\to\frac{\tan\alpha-\sin\alpha}{\sin\alpha-\cos\alpha}=\frac{\frac{8}{15}-\frac{8}{17}}{\frac{8}{17}-\frac{15}{17}}=\frac{\frac{16}{255}}{\frac{-7}{17}}=\boxed{-\frac{16}{105}}$$ ۹

$$2\sin\alpha<\sin2\alpha\xrightarrow{\sin2\alpha=2\sin\alpha\cos\alpha}2\sin\alpha<2\sin\alpha\cos\alpha\quad\sin\alpha<\sin\alpha\cos\alpha$$

$$\to\cos\alpha>1\ \times\ \to\sin\alpha<0$$

$$\frac{\cot\alpha}{\sin\alpha}>0\quad\frac{\cos\alpha}{\sin^2\alpha}>0\xrightarrow{\sin^2\alpha>0}\cos\alpha>0\quad\left.\begin{matrix}\sin\alpha<0\\ \cos\alpha>0\end{matrix}\right\}\quad\boxed{\text{ربع چهارم}}$$ ۱۰