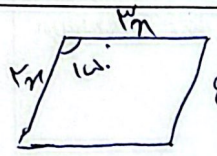
نام و نام خانوادگی ..... پاسخنامه تشریحی تکلیف شماره ۲۰ کلاس ۲۰۰ .....

۱



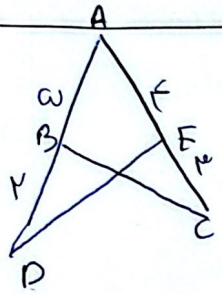
$S = \frac{1}{2}ab\sin C \Rightarrow 2\times\frac{1}{2}\times\sin 120^\circ \times 2\pi\times 3\pi = 9\sqrt{3} \Rightarrow \pi = \sqrt{3}$

ضلع بزرگ $= 3\sqrt{3}$

ضلع کوچک $= 2\sqrt{3}$

$P = 2(3\sqrt{3}) + 2(2\sqrt{3}) = 10\sqrt{3}$

۲



$\sin A\left(\frac{1}{2}\times 5\times 7 - \frac{1}{2}\times 4\times 7\right) = \frac{7}{2} \rightarrow 7\sin\hat{A} = \frac{7}{2} \rightarrow \sin\hat{A} = \frac{1}{2}$

$\hat{A} = 30^\circ \rightarrow \tan\hat{A} = \frac{1}{\sqrt{3}}$

۳

$\frac{1}{\sqrt{\cos^2\alpha}} - \tan\alpha = \frac{1+\sin\alpha}{|\cos\alpha|} \Rightarrow \frac{1}{|\cos\alpha|} - \frac{\sin\alpha}{\cos\alpha} = \frac{1+\sin\alpha}{|\cos\alpha|} \xrightarrow{\text{زاویه دوم}} \frac{-1}{\cos\alpha} - \frac{\sin\alpha}{\cos\alpha} = \frac{1+\sin\alpha}{-\cos\alpha}$

$\cos\alpha < 0$ (۱)

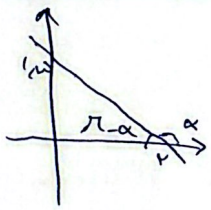
$\frac{|\sin\alpha|}{\cos\alpha} = \frac{-1}{\cot\alpha} \rightarrow \frac{|\sin\alpha|}{\cos\alpha} = \frac{-\sin\alpha}{\cos\alpha} \xrightarrow{\div} \sin\alpha < 0$ (۲)

به حاصل یک ودو ← α در ناحیه سوم دایره مثلثاتی است

۴

$\tan(\pi-\alpha) = \frac{1}{\sqrt{3}} \rightarrow \tan\alpha = \frac{\sqrt{3}}{4}$

$\tan\left(\frac{\pi}{2}-\alpha\right) = \cot\alpha = \frac{1}{\tan\alpha} = \frac{1}{\frac{\sqrt{3}}{4}} = \frac{4}{\sqrt{3}}$



۵

$\frac{3\cos(248) - 2\sin(150)}{\sin(202) - \cos(292)} = \frac{3\cos(270-22) - 2\sin(180-22)}{\sin(180+22) - \cos(270+22)} = \frac{-3\sin 22 - 2\sin 22}{-\sin 22 - \sin 22} = \frac{-5\sin 22}{-2\sin 22} = \frac{5}{2}$

۶

$\sin(\alpha+\frac{\pi}{2})=\cos\alpha \qquad \sin(\alpha-\pi)=-\sin\alpha \qquad \sin^2\alpha=1-\cos^2\alpha=1-\frac{4}{9}=\frac{5}{9}$

$\sin\alpha=\frac{\sqrt{5}}{3}$ ← $\sin\alpha<0$ ← (α در ربع سوم یا چهارم)

$\frac{\sin\alpha}{\cos\alpha}=\tan\alpha=\frac{-\sqrt{5}}{2}$

$\frac{\cos\alpha+\sin\alpha}{|\tan^2\alpha-1|}=\frac{\frac{2}{3}-\frac{\sqrt{5}}{3}}{|\frac{5}{4}-1|}=\frac{4(2-\sqrt{5})}{3}=\frac{8-4\sqrt{5}}{3}$

۷

$\sin\alpha=2\cos\alpha \Rightarrow \tan\alpha=2$

$1+\tan^2\alpha=\frac{1}{\cos^2\alpha} \Rightarrow \frac{1}{\cos^2\alpha}=1+4=5 \Rightarrow \cos^2\alpha=\frac{1}{5} \xrightarrow[\cos\alpha<0]{\text{ربع سوم}} \cos\alpha=\frac{1}{\sqrt{5}}=-\frac{\sqrt{5}}{5}$

۸

شیب $=\frac{2m}{m^2-1}=\tan 60^\circ \rightarrow \frac{2m}{m^2-1}=\sqrt{3} \rightarrow \sqrt{3}m^2+2m-\sqrt{3}=0$

$\rightarrow m=\frac{-2\pm\sqrt{16}}{2\sqrt{3}}$

$|m_1-m_2|=\frac{2\sqrt{16}}{2\sqrt{3}}=\frac{4}{\sqrt{3}}$

۹

$-\frac{\pi}{2}<x<\frac{\pi}{2} \rightarrow -\frac{\pi}{4}<-x<\frac{\pi}{4} \rightarrow 0<\frac{\pi}{4}-x<\frac{\pi}{2} \rightarrow \tan(\frac{\pi}{4}-x)>0 \rightarrow \frac{1-m}{2+m}>0$

	-2		1	
$1-m$	$+$	$+$	0	$-$
$2+m$	$-$	0	$+$	$+$

$-2<m<1$

۱۰

$\tan 330=\tan(360-30)=-\tan 30=-\frac{\sqrt{3}}{3}$

$\cos 510=\cos(180+330)=-\cos 330=-\frac{\sqrt{3}}{2}$

$\tan 480=\tan(360+120)=\tan(90\times 4+30)=-\cot 30=-\sqrt{3}$

$\sin 840=\sin(720+120)=\cos 30=\frac{\sqrt{3}}{2}$

$\tan 330\cos 510+\tan 480\sin 840=(-\sqrt{3})(-\frac{\sqrt{3}}{2})+(-\sqrt{3})(\frac{\sqrt{3}}{2})=0$