بنیامین نوروزی _ تکلیف ۲۸ _ یازدهم پسر B

(۱)

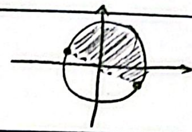
$1-\cos^2\alpha=\sin^2\alpha$

$\frac{\cos\alpha}{\sin\alpha}=\frac{\cos\alpha}{|\sin\alpha|}\rightarrow \sin>0\rightarrow$ ناحیه ۱ یا ۲ / $\frac{\sqrt{1-\sin^2\alpha}}{|\cos\alpha|}=\frac{1}{|\cos\alpha|}-\frac{\sin\alpha}{|\cos\alpha|}=\frac{1}{|\cos\alpha|}-\frac{\sin\alpha}{\cos\alpha}\Rightarrow \cos>0$ ناحیه ۱ یا ۴

$\Rightarrow \alpha\rightarrow$ ناحیه اول

(۲)

$-\frac{\pi}{6}<2x<\frac{5\pi}{6}\rightarrow -\frac{1}{2}<\sin 2x\leq 1\rightarrow -2<m-1\leq 4\rightarrow \boxed{-1<m\leq 5}$



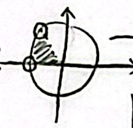
(۳)

$\frac{\sin^3x+\cos^3x}{\sin x\cos x}=-3\rightarrow \sin x\cos x=\frac{-1}{3}$

$\sin^3x+\cos^3x=(\sin x+\cos x)(\sin^2x+\cos^2x-\sin x\cos x)$

$\sin x+\cos x$ ⊖ $\;(-\sqrt{\sin^2x+\cos^2x+2\sin x\cos x})$ ، $1+(-\frac{2}{3})$ ؛ $1-(\frac{-1}{3})$

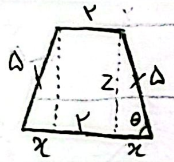
$\frac{3\pi}{4}<x<\pi\rightarrow$



$\rightarrow \sin x>0$, $\cos x<0$, $|\cos x|>|\sin x|$

$\Rightarrow=\frac{-\sqrt{3}}{3}\left(\frac{4}{3}\right)=\frac{-9}{4\sqrt{3}}=\frac{-3\sqrt{3}}{4}$

(۴)



$\cos\theta=\frac{6}{10}=\frac{x}{5}\rightarrow \boxed{x=3}\Rightarrow$ قاعده بزرگ $=8\Rightarrow S=\frac{(2+8)\times 4}{2}=20$

$z=\sqrt{25-9}=4$

(۵)

$\tan(\frac{3\pi}{2}+15)\times\tan(-\pi+15)-\sin(6\pi+15)\times\cos(\frac{3\pi}{2}-15)=(-\cot 15^\circ)(+\tan 15^\circ)-(\sin 15^\circ)(-\sin 15^\circ)$

$\Leftarrow(-1)-(-\sin^2 15)$

$\sin^2 15^\circ-1=\boxed{-\cos^2 15^\circ=K\cos^2 15}\rightarrow\boxed{K=-1}$

(۶)

$\sqrt{3}\cos(\pi+30^\circ)\sin(\frac{3\pi}{2}-27^\circ)-\sqrt{2}\sin(\pi-45^\circ)\cos(\pi-27^\circ)=\sqrt{3}(-\cos 30^\circ)(-\cos 27^\circ)-\sqrt{2}(+\sin 45^\circ)(-\cos 27^\circ)$ ؛ $\cos 30^\circ=\frac{\sqrt{3}}{2}$ ، $\sin 45^\circ=\frac{\sqrt{2}}{2}$

$=(-\cos 27^\circ)(\frac{-3}{2}-\frac{2}{2})=\frac{5}{2}\cos 27^\circ$ ؛ $\frac{-3}{2}-\frac{2}{2}=\frac{-5}{2}$

$\frac{\frac{5}{2}\cos 27^\circ}{\cos 27^\circ}=\frac{5}{2}$

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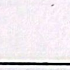
$16\cos^2(\frac{\pi}{12})\cos^2(\frac{\pi}{6})\cos^2(\frac{\pi}{3})\cos^2(\frac{2\pi}{3})=\frac{-3}{4}\cos^2 15^\circ=\frac{-3}{4}\left(\frac{1+\cos 30^\circ}{\sin 30^\circ}\right)=\frac{-3}{4}\left(\frac{\frac{2+\sqrt{3}}{2}}{\frac{1}{2}}\right)=\frac{-6-3\sqrt{3}}{4}$

$\frac{3}{4}\times\frac{1}{4}\times\frac{-1}{4}$

(۸)

$\cos x<0/\sin x<0$ / $1-\sin x=4+4\sin x\rightarrow \sin x=\frac{-3}{5}\Rightarrow$



$\sin 2\alpha=\frac{2\tan\alpha}{1+\tan^2\alpha}$ ؛ $\tan(\frac{\alpha}{2})=t$

$\Rightarrow\frac{-3}{5}=\frac{2t}{1+t^2}\rightarrow -3t^2-3=10t\rightarrow 3t^2+10t+3=0\rightarrow\frac{-10\pm\sqrt{100-36}}{6}$ → $t=-3$ صحیح ، $t=\frac{-1}{3}$ غلط

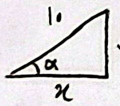
(۹)

$\frac{1-\cos\alpha}{\sin\alpha}=\frac{\sin\alpha}{1+\cos\alpha}=\tan(\frac{\alpha}{2})\rightarrow\cot(\frac{\alpha}{2})+\cot(\frac{\alpha}{2})=2\cot(\frac{\alpha}{2})=K\cot(\frac{\alpha}{2})\rightarrow\boxed{K=2}$

(۱۰)

ناحیه ۲ $\rightarrow \sin\alpha>0$ ، $\cos\alpha<0$ / $\cos(2\pi+\frac{3\pi}{4}+\alpha)=\cos\frac{3\pi}{4}\cos\alpha-\sin\frac{3\pi}{4}\sin\alpha=(-\frac{\sqrt{2}}{2})(\frac{-7\sqrt{2}}{10})-(\frac{\sqrt{2}}{2})(\frac{\sqrt{2}}{10})$ (بی اثر)

$\sin\alpha=\frac{\sqrt{2}}{10}\rightarrow$



$\rightarrow x=\sqrt{100-2}=\sqrt{98}=7\sqrt{2}$

$=\frac{14}{20}-\frac{2}{20}=\frac{12}{20}=0/6$

$\Rightarrow\cos\alpha=\frac{-7\sqrt{2}}{10}$