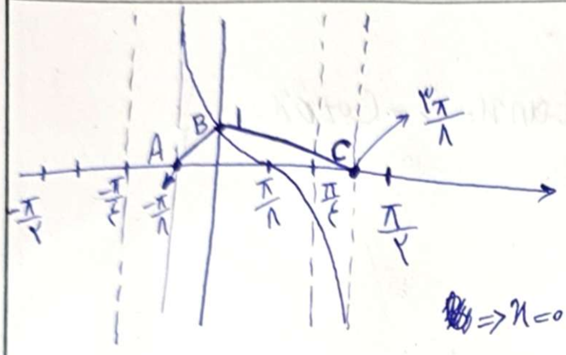
نام و نام خانوادگی ....طاها حق جوی.... پاسخنامه تشریحی تکلیف شماره ....۱۵.... کلاس ....دوازدهم ریاضی A....

۱



$\rightarrow S=\frac{1\times(\frac{۳\pi}{۸}+\frac{\pi}{۸})}{۲}=\frac{\pi}{۴}$

$\Rightarrow x=0\rightarrow \tan(\frac{\pi}{۴})=1=B$

۲

$S=\sin\alpha \quad P=\frac{1}{۴}\cos^۲\alpha \Rightarrow \frac{۲}{۳}+x=\sin\alpha\rightarrow \frac{۴}{۹}+x^۲+\frac{۴}{۳}x=\sin^۲\alpha=1-\cos^۲\alpha$ ($\frac{۸}{۳}x$)

$,\ \frac{۲}{۳}x=\frac{-1}{۴}\cos^۲\alpha\rightarrow \boxed{x=-\frac{۳}{۸}\cos^۲\alpha}\rightarrow -\cos^۲\alpha=\frac{۸}{۳}x$

$\Rightarrow x^۲-\frac{۴}{۳}x-\frac{۵}{۹}=0\rightarrow (x-\frac{۵}{۳})(x+\frac{1}{۳})=0\rightarrow x=\begin{cases}-\frac{1}{۳}\rightarrow\cos^۲\alpha=\frac{۸}{۹}\ ✓\\ \frac{۵}{۳}\rightarrow\cos^۲\alpha=-\frac{۴۰}{۹}\ ✗\end{cases}$

$1+\tan^۲\alpha=\frac{1}{\cos^۲\alpha}=\frac{۹}{۸}$

۳

$\log(-\tan\alpha)=\log ۳\rightarrow\tan\alpha=-۳\rightarrow\tan^۲\alpha+1=\frac{1}{\cos^۲\alpha}\rightarrow ۹+1=10=\frac{1}{\cos^۲\alpha}$

$\rightarrow\cos^۲\alpha=\frac{1}{10}\rightarrow\frac{-1}{\sqrt{10}}=\cos\alpha\rightarrow\sin\alpha=\frac{۳}{\sqrt{10}}$

$\Rightarrow \sin\alpha-\cos\alpha=\frac{۳}{\sqrt{10}}+\frac{1}{\sqrt{10}}=\frac{۴}{\sqrt{10}}$

$\boxed{\begin{array}{l}\sin\alpha>0\\ -\cos\alpha>0\rightarrow\cos\alpha<0\end{array}}$

۴

$(1-\cos^۲\theta)^۲+\cos^۲\theta-\frac{۴}{۵}=-\cos^۴\theta-\cos^۲\theta+\frac{1}{۵}=0\rightarrow\cos^۴\theta=-\cos^۲\theta+\frac{1}{۵}$

$\rightarrow\cos^۴\theta+\sin^۲\theta=\sin^۲\theta-\cos^۲\theta+\frac{1}{۵}$

$\cos^۲\theta=\frac{-۵\pm\sqrt{۴۵}}{10}\rightarrow$

۵

$\frac{\sin^۲x}{\cos x}-\frac{1}{\cos x}>0\rightarrow\frac{-\cos^۲x}{\cos x}=-\cos x>0\rightarrow -1<\cos x<0$

$\frac{\cancel{\sin x}(۳+\cos x)}{۲(1-\cos^۲x)}=\frac{۳+\cos x}{۲\sin x}<0\rightarrow\frac{+}{۲\sin x}<0\rightarrow\sin x<0$

($1-\cos^۲x=\sin^۲x$)

ناحیه ۳

$\frac{2\cos x+3\sin x}{\sin x\cos x}=\frac{3\sin x+2\cos x}{\frac{1}{2}\sin 2x}=0 \to 3\sin x+2\cos x=0$ $\to 3\sin x=-2\cos x \to \frac{\sin x}{\cos x}=\frac{-2}{3}=\tan x \to \cot x=-\frac{3}{2}$ $\Rightarrow \tan x+\cot x=\frac{-2}{3}-\frac{3}{2}=-\frac{13}{6}$	۶
$\frac{\sqrt{1+\cos 40}}{\cos 40+\underbrace{\cos 80}_{1+2\cos^2 40}}=\frac{\sqrt{2}\cos 20^\circ}{2\cos^2 40+\cos 40+1}=\frac{\sqrt{2}\cos 20}{\cos 20}=\sqrt{2}$	۷
$(\cos 10)\times(\cos 20)\times\left(\frac{1-\tan^2 20}{\frac{1}{\cos^2 20}}\right)$ $\quad \frac{\frac{1-\sin^2 20}{\cancel{\cos^2 20}}}{\frac{1}{\cancel{\cos^2 20}}}=\cos 40^\circ$ $\Rightarrow \cos 10^\circ\cos 20^\circ\cos 40^\circ\times\frac{\sin 10^\circ}{\sin 10^\circ}=\frac{1}{\sin 10}(\sin 10\cos 10\cos 20\cos 40)$ $\frac{1}{2}\quad 20\quad \frac{1}{2}\sin 40\quad \frac{1}{2}\sin 80$ $\cos 10$ $=\frac{1}{8}\frac{\cos 10}{\sin 10}=\frac{\cot 10}{8}$	۸
$\sin\alpha=2-3\cos\alpha$ $\quad \sin^2 x+\cos^2 x=1\to(2-3\cos\alpha)^2+\cos^2\alpha=1$ $4+9\cos^2\alpha-12\cos\alpha+\cos^2\alpha=1\to 10\cos^2\alpha-12\cos\alpha+3=0\to 10\cos^2\alpha=12\cos\alpha-3$ $5(2\cos^2\alpha-1)-12\cos\alpha=10\cos^2\alpha-12\cos\alpha-5=12\cos\alpha-3-12\cos\alpha-5$ $=-8$	۹
	۱۰