صبا وفازاده تکلیف شماره ۱۵ دوازدهم دخترB

۲۰ آذر

۱) A $T=\frac{\pi}{|b|}=\frac{\pi}{2}$ $x=0 \to y=\tan\frac{\pi}{4}=1$ B=1 $S_{A\hat{B}C}=\frac{AC\times BH}{2}=\frac{\frac{\pi}{2}\times 1}{2}=\frac{\pi}{4}$

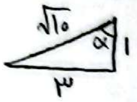
۲

۲) $(\frac{2}{3})^2-\sin\alpha(\frac{2}{3})-\frac{1}{4}(1-\sin^2\alpha)=0$ $\frac{1}{4}\sin^2\alpha-\frac{2}{3}\sin\alpha+\frac{7}{36}=0 \xrightarrow{\times 36} 9\sin^2\alpha-24\sin\alpha+7=0$

$\sin\alpha=\frac{7}{3}$ غ ق ق $\sin\alpha=\frac{1}{3} \to \cos\alpha=\frac{2\sqrt{2}}{3}$ $1+\tan^2\alpha=\frac{1}{\cos^2\alpha}=\frac{1}{\frac{8}{9}}=\frac{9}{8}$

۲

۳) $\log\frac{\sin\alpha}{-\cos\alpha}=\log 3$ $\frac{\sin\alpha}{-\cos\alpha}=3$ $-\tan=3$ $\tan=-3$ $\sin\alpha>0$ و $\cos\alpha<0$



$\sin\alpha=\frac{3}{\sqrt{10}}$ $\cos\alpha=\frac{-1}{\sqrt{10}}$ $\sin\alpha-\cos\alpha=\frac{3}{\sqrt{10}}-(-\frac{1}{\sqrt{10}})=\frac{4}{\sqrt{10}}=\frac{2\sqrt{10}}{5}$

۲

۴) $\sin^4\theta+1-\sin^2\theta=\frac{4}{5}$ $\cos^4\theta+\sin^2\theta=(1-\sin^2\theta)^2+\sin^2\theta=1-2\sin^2\theta+\sin^4\theta+\sin^2\theta$

$\sin^4\theta-\sin^2\theta+1=\frac{4}{5} \to$ خود سوال داده بود

۲

۵) $\sin x\tan x-\frac{1}{\cos x}>0$ $\frac{\sin^2 x-1}{\cos x}>0$ $\frac{-\cos^2 x}{\cos x}>0 \to -\cos x>0$ $\cos x<0$

$\frac{\sin x(3+\cos x)}{2(1-\cos^2 x)}<0$ $\frac{\sin x(3+\cos x)}{2\sin^2 x}<0$ $\xrightarrow{3+\cos x>0}\sin x<0$ ناحیه سوم

۲

۶) $\frac{2\cos x+3\sin x}{\sin x\cos x}=0$ $2\cos x=-3\sin x$ $\cot x=-\frac{3}{2}\to\tan x=-\frac{2}{3}$ $\tan x+\cot x=-\frac{2}{3}-\frac{3}{2}=-\frac{13}{6}$

۷) $1+\sin 50=\sin^2 25+\cos^2 25+2\sin 25\cos 25=(\sin 25+\cos 25)^2$

$\sin 50+\sin 10=\sin(30+20)+\sin(30-20)=\sin 30\cos 20+\cos 30\sin 20+\sin 30\cos 20-\cos 30\sin 20$

$=2\sin 30\cos 20\xrightarrow{\sin 30=\frac{1}{2}}\cos 20$

$\frac{\sqrt{(\sin 25+\cos 25)^2}}{\cos 20}=\frac{\sin 25+\cos 25}{\cos 20}=\frac{\sqrt{2}\sin(25+\frac{\pi}{4})}{\cos 20}=\frac{\sqrt{2}\sin 70}{\cos 20}\xrightarrow{\sin 70=\cos 20}\sqrt{2}$

۲

۸) $\cos 10\times\cos 20\times\cos 40\xrightarrow{\times\frac{\sin 10}{\sin 10}}\frac{\sin 10\cos 10\cos 20\cos 40}{\sin 10}=\frac{\frac{1}{2}\sin 20\cos 20\cos 40}{\sin 10}$

$=\frac{\frac{1}{4}\sin 40\cos 40}{\sin 10}=\frac{\frac{1}{8}\sin 80}{\sin 10}\xrightarrow{\sin 80=\cos 10}\frac{1}{8}\cot 10$

۲

۹) $\sin\alpha+3\cos\alpha=2\xrightarrow{\div\cos\alpha}\tan\alpha+3=\frac{2}{\cos\alpha}$ $\tan\alpha=\frac{2-3\cos\alpha}{\cos\alpha}$ $1+\tan^2\alpha=\frac{1}{\cos^2\alpha}$

$(\frac{2-3\cos\alpha}{\cos\alpha})^2+1=\frac{1}{\cos^2\alpha}$ $\frac{4+9\cos^2\alpha-12\cos\alpha}{\cos^2\alpha}+1=\frac{1}{\cos^2\alpha}$ $\frac{10\cos^2\alpha-12\cos\alpha+4}{\cos^2\alpha}=\frac{1}{\cos^2\alpha}$

$\cos 2\alpha=2\cos^2\alpha-1$ $5\cos 2\alpha-12\cos\alpha=\underbrace{10\cos^2\alpha-5-12\cos\alpha}_{-3}=-8$

۲

۱۰) $\sin B\sin C=\frac{1+\cos A}{2}$ $2\sin B\sin C=1+\cos A$ $2\sin B\sin C=1+\underbrace{\cos(\pi-(B+C))}_{-\cos(B+C)}$

$2\sin B\sin C=1-\cos B\cos C+\sin B\sin C$ $\sin B\sin C+\cos B\cos C=1$

$\cos(B-C)=1$ $B-C=\begin{cases}2\pi & \text{غ ق ق}\\ 0\end{cases}$ $B=C=72$ $A=180-2(72)=36$

۲