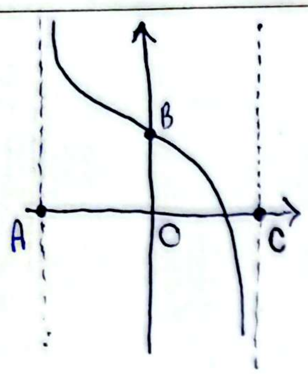
نام و نام خانوادگی آرش سلطانی ...... پاسخنامه تشریحی تکلیف شماره ۱۵ ...... کلاس دوازدهم پسر A



$\rightarrow y=-\tan(2x-\frac{\pi}{4}) \rightarrow \overline{AC}=T=\frac{\pi}{|a|}=\frac{\pi}{2}$

$\xrightarrow{x=0} =-\tan(-\frac{\pi}{4})=1=OB$ ۱

$$S_{\overset{\triangle}{ABC}}=\frac{OB\times AC}{2}=\frac{1\times\frac{\pi}{2}}{2}=\pi/4$$

$x^2-(\sin\alpha)x-\frac{1}{4}(1-\sin^2\alpha)\xRightarrow{x=2/3}\frac{4}{9}-\frac{2}{3}\sin\alpha-\frac{1}{4}+\frac{1}{4}\sin^2\alpha\xlongequal{\times 36}9\sin^2\alpha-24\sin\alpha+7=0$

$\rightarrow \Delta=324 \rightarrow \sin\alpha=\frac{24\pm18}{18}=$ $\rightarrow \frac{1}{3} \rightarrow \cos^2\alpha=1-\sin^2\alpha=\frac{8}{9}$ – ۲

$\rightarrow \frac{7}{3}\times$ غ ق ق

$\rightarrow 1+\tan^2\alpha=\frac{1}{\cos^2\alpha}=\frac{1}{\frac{8}{9}}=\frac{9}{8}$

$\log(\sin\alpha)-\log(-\cos\alpha)=\log-\frac{\sin\alpha}{\cos\alpha}=\log(-\tan\alpha)=\log 3\rightarrow \{\tan\alpha=-3\}$ –

$\sin\alpha>0$ $\quad\cos\alpha<0$

$\rightarrow 1+\tan^2\alpha=\frac{1}{\cos^2\alpha}=10 \rightarrow \cos^2\alpha=\frac{1}{10}\rightarrow\cos\alpha=-\frac{\sqrt{10}}{10}$ / $\sin^2\alpha=\frac{9}{10}\rightarrow \sin\alpha=\frac{3}{10}$ ۳

$$\sin\alpha-\cos\alpha=\frac{3}{10}-(-\frac{\sqrt{10}}{10})=\frac{3+\sqrt{10}}{10}$$

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

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

$\rightarrow \frac{3\sin x+\sin x\cos x}{2\sin^2 x}=\frac{3}{2\sin x}+\frac{\cos x}{2\sin x}=\frac{3+\cos x}{2\sin x}<0\rightarrow\{\frac{3+\cos x}{\sin x}<0\}$

$\rightarrow \frac{\sin^2 x-1}{\cos x}=-\frac{\cos^2 x}{\cos x}=-\cos x>0\rightarrow \cos x<0$ ۵

صورت همواره $(+)$

$\sin x<0$

انتهای کمان مثلثاتی در ناحیه سوم قرار دارد

$\rightarrow \dfrac{2\cos x+3\sin x}{\sin x\cos x}=0 \rightarrow 2\cos x+3\sin x=0 \rightarrow 2\cos x=-3\sin x$

$\rightarrow \tan x=\dfrac{\sin x}{\cos x}=-\dfrac{2}{3} \rightarrow \cot x=-\dfrac{3}{2} \Rightarrow \tan x+\cot x=$ 6

$=\left(-\dfrac{2}{3}\right)+\left(-\dfrac{3}{2}\right)=-\dfrac{13}{6}$

$\rightarrow \underbrace{\sin p+\sin q=2\sin\dfrac{p+q}{2}\cos\dfrac{p-q}{2}} \Rightarrow \dfrac{\sqrt{1+\sin 50}}{\sin 50+\sin 10}=\dfrac{\sqrt{\sin 90+\sin 50}}{2\underbrace{\sin 30}_{\frac{1}{2}}\cos 20}$

$=\dfrac{\sqrt{2\,\underset{\cos 20}{\sin 70}\cos 20}}{\cos 20}=\dfrac{\cos 20\times\sqrt{2}}{\cos 20}=\sqrt{2}$ 7

$\rightarrow \cos 10\cos 20\cos 40=\cos 10(\cos^2 10-\sin^2 10)(\cos^2 20-\sin^2 20)$

$(\cos^2 10-\sin^2 10)^2 \qquad (2\sin 10\cos 10)^2$

$\rightarrow =\cos 10(\cos^2 10-\sin^2 10)(\underbrace{\cos^4 10+\sin^4 10}_{1-2\sin^2 x\cos^2 x}-6\sin^2 x\cos^2 x)$ 8

$= \cos 10(\cos^2 10-\sin^2 10)(1-8\sin^2 10\cos^2 10)$

$\rightarrow \sin\alpha=2-3\cos\alpha \xrightarrow{\text{توان ۲}} 1-\cos^2\alpha=4+9\cos^2\alpha-12\cos\alpha \rightarrow 12\cos\alpha=10\cos^2\alpha+3$

$5\cos^2\alpha-12\cos\alpha=5(\cos^2\alpha-\sin^2\alpha)-10\cos^2\alpha-3=-5(\sin^2\alpha+\cos^2\alpha)-3=$ 9

$-5-3=-8$

$\overset{\triangle}{ABC}: \hat{A}+\hat{B}+\hat{C}=180 \rightarrow \hat{B}+\hat{C}=180-\hat{A} \xrightarrow{\hat{B}=72} \hat{C}=108-\hat{A} \rightarrow \hat{B}-\hat{C}=\hat{A}-36$

$\rightarrow \sin\hat{B}\sin\hat{C}=\dfrac{1}{2}\Big(\underbrace{\cos(B-C)}_{\cos(A-36)}-\underbrace{\cos(B+C)}_{\cos(\pi-A)}\Big)=\dfrac{1}{2}\big(\cos(A-36)+\cos A\big)=\cos^2\dfrac{A}{2}$

$\cos(A-36)+\cos A=2\cos^2\dfrac{A}{2}=1+\cos A \Rightarrow \cos(A-36)=1 \begin{cases} A-36=360 \rightarrow A=396 \\ A-36=0 \rightarrow A=36^\circ \end{cases}$ 10