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

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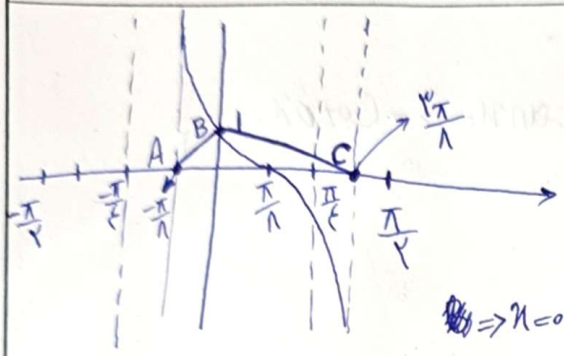

$$\rightarrow S=\frac{1\times\left(\frac{3\pi}{8}+\frac{\pi}{8}\right)}{2}=\frac{\pi}{4}$$

$$\Rightarrow x=0\rightarrow \tan\left(\frac{\pi}{4}\right)=1=B$$

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$$S=\sin\alpha \quad P=\frac{1}{4}\cos^2\alpha \Rightarrow \frac{2}{3}+\alpha=\sin\alpha \rightarrow \frac{4}{9}+x^2+\frac{4}{3}x=\sin^2\alpha=1-\cos^2\alpha$$

$$\frac{2}{3}x=\frac{-1}{4}\cos^2\alpha \rightarrow \boxed{x=-\frac{3}{8}\cos^2\alpha} \rightarrow \boxed{-\cos^2\alpha=\frac{8}{3}x}$$

$$\Rightarrow x^2-\frac{4}{3}x-\frac{5}{9}=0 \rightarrow \left(x-\frac{5}{3}\right)\left(x+\frac{1}{3}\right)=0 \rightarrow x=\begin{cases}-\frac{1}{3}\rightarrow \cos^2\alpha=\frac{8}{9} \checkmark\\ \frac{5}{3}\rightarrow \cos^2\alpha=-\frac{40}{9} \times\end{cases}$$

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

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$$\log(-\tan\alpha)=\log 3 \rightarrow \tan\alpha=-3 \rightarrow \tan^2\alpha+1=\frac{1}{\cos^2\alpha} \rightarrow 9+1=10=\frac{1}{\cos^2\alpha}$$

$$\rightarrow \cos^2\alpha=\frac{1}{10} \rightarrow \frac{-1}{\sqrt{10}}=\cos\alpha \rightarrow \sin\alpha=\frac{3}{\sqrt{10}}$$

$$\Rightarrow \sin\alpha-\cos\alpha=\frac{3}{\sqrt{10}}+\frac{1}{\sqrt{10}}=\frac{4}{\sqrt{10}}$$

$\sin\alpha>0$
$-\cos\alpha>0\rightarrow\cos\alpha<0$

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$$(1-\cos^2\theta)^2+\cos^2\theta-\frac{4}{5}=-\cos^4\theta-\cos^2\theta+\frac{1}{5}=0 \rightarrow \cos^4\theta=-\cos^2\theta+\frac{1}{5}$$

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

$$\cos^2\theta=\frac{-5\pm\sqrt{45}}{10} \rightarrow$$

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

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

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

$$\frac{\sin x(2+\cos x)}{2(1-\cos^2 x)}=\frac{2+\cos x}{2\sin x}<0 \rightarrow \frac{+}{2\sin x}<0 \rightarrow \sin x<0$$

غیرممکن

$$\frac{2\cos x + 3\sin x}{\sin x \cos x} = \frac{3\sin x + 2\cos x}{\frac{1}{2}\sin 2x} = 0 \rightarrow 3\sin x + 2\cos x = 0$$

$$\rightarrow 3\sin x = -2\cos x \rightarrow \frac{\sin x}{\cos x} = \frac{-2}{3} = \tan x \rightarrow \cot x = -\frac{3}{2}$$

$$\Rightarrow \tan x + \cot x = \frac{-2}{3} - \frac{3}{2} = -\frac{13}{6}$$ ب ✓

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$$\frac{\sqrt{1+\cos 40}}{\cos 40 + \cos 10} = \frac{\sqrt{2\cos^2 20}}{2\cos^2 20 + \cos 40 + 1} = \frac{\sqrt{2}\cos 20}{\cos 20} = \sqrt{2}$$

ب ✓

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$$(\cos 10)\times(\cos 20)\times\left(\frac{1-\tan^2 20}{\frac{1}{\cos^2 20}}\right) \rightarrow \frac{1-\sin^2 20}{\frac{\cos^2 20}{\cos^2 20}} = \cos 40^\circ$$

$$\Rightarrow \cos 10^\circ \cos 20^\circ \cos 40^\circ \times \frac{\sin 10^\circ}{\sin 10^\circ} = \frac{1}{\sin 10}\left(\frac{1}{2}\sin 10 \cos 10 \cos 20 \cos 40\right)$$

$$= \frac{1}{8}\frac{\cos 10}{\sin 10} = \frac{\cot 10}{8}$$ ب ✓

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$\sin\alpha = 2 - 3\cos\alpha$ | $\sin^2 x + \cos^2 x = 1 \rightarrow (2-3\cos\alpha)^2 + \cos^2\alpha = 1$

$$4 + 9\cos^2\alpha - 12\cos\alpha = 1 \rightarrow 10\cos^2\alpha - 12\cos\alpha + 3 = 0 \rightarrow 10\cos^2\alpha = 12\cos\alpha - 3$$

$$5(2\cos^2\alpha - 1) - 12\cos\alpha = 10\cos^2\alpha - 12\cos\alpha - 5 = 12\cos\alpha - 3 - 12\cos\alpha - 5$$

$$= -8$$

ب ✓

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$$\cos^2\frac{A}{2} = \frac{1+\cos A}{2}$$

$$2\sin B \sin C = 1 + \cos A \quad \xrightarrow{A = \pi - (B+C)}$$

$$2\sin B \sin C = 1 + \cos(\pi - (B+C))$$

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

$$\cos(B-C) = 1 \rightarrow B = C$$

$$A = 180 - (75 + 75) = 30$$

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