نام و نام خانوادگی ..... پاسخنامه تشریحی تکلیف شماره ۱ کلاس .....

۱۹٫۵

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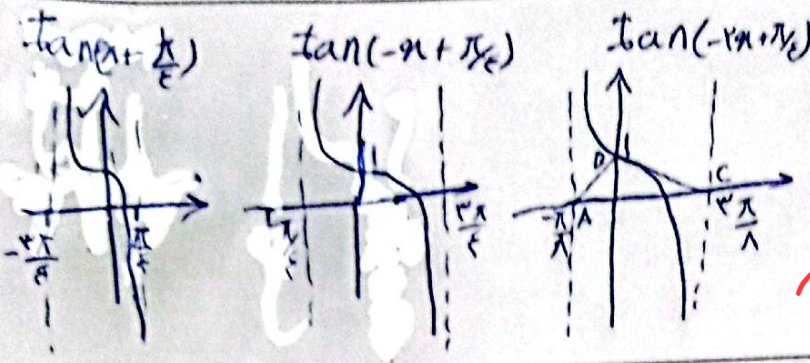

$S_{AB\hat{C}} = \frac{\left[\frac{3\pi}{8} - \left(-\frac{\pi}{8}\right)\right] \times 1}{2} = \frac{\pi}{4}$

۲

$x = 2\pi \rightarrow \frac{\varepsilon}{9} - 2\sin\alpha - \frac{1}{\varepsilon}\cos^2\alpha = 0 \quad \cos^2\alpha = 1 - \sin^2\alpha \rightarrow \frac{\varepsilon}{9} - 2\sin\alpha - \frac{1}{\varepsilon} + \frac{1}{\varepsilon}\sin^2\alpha = 0$

$\times\varepsilon \rightarrow \sin^2\alpha - 8\sin\alpha + 7 = 0 \rightarrow \sin\alpha_1, \sin\alpha_2 = \frac{8 \pm \sqrt{64-28}}{2}$ → $\sin\alpha_1 = 7$ غ ق ق

→ $\sin\alpha_2 = 1$ ✓

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

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

۳

$\log\sin\alpha - \log(-\cos\alpha) = \log 3 \rightarrow \sin\alpha > 0 \;,\; -\cos\alpha > 0 \rightarrow \cos\alpha < 0$ I

$\log\frac{\sin\alpha}{\cos\alpha} = \log(-\tan\alpha) = \log 2 \rightarrow \tan\alpha = -2 \quad 1 + \tan^2\alpha = \frac{1}{\cos^2\alpha}$

$\rightarrow \cos\alpha = \pm\sqrt{0.1}$ I $\cos\alpha = -\sqrt{0.1} \quad \cos^2\alpha + \sin^2\alpha = 1 \rightarrow \sin\alpha = \sqrt{0.8} = 2\sqrt{0.1}$

$\sin\alpha - \cos\alpha = 2\sqrt{0.1} - (-\sqrt{0.1}) = 3\sqrt{0.1}$

۴

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

$\rightarrow \cos^4\theta = \cos^2\theta - 1/5 \quad \sin^2\theta + \cos^4\theta = \sin^2\theta + \cos^2\theta - 1/5 =$

$1 - 1/5 = 4/5$

۵

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

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

α در ناحیه سوم است

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

$\rightarrow \cot x=\frac{1}{\tan x}=-\frac{3}{2}$ $\quad \tan x+\cot x=\frac{-2}{3}-\frac{3}{2}=\frac{-4-9}{6}=\frac{-13}{6}$ ۶

(۲) ✓

$\sin 50+\sin 10=\sin(30+20)+\sin(30-20)=\sin 30\cos 20+\sin 20\cos 30+$
$\sin 30\cos 20-\sin 20\cos 30=2\sin 30\cos 20$ $\quad \sqrt{1+\sin 80}=\sqrt{1+\cos 40}=$
$\sqrt{2\cos^2 20}=\sqrt{2}\cos 20 \Longrightarrow \frac{\sqrt{1+\sin 80}}{\sin 50+\sin 10}=\frac{2\sin 30\cos 20}{\sqrt{2}\cos 20}=\sqrt{2}\sin 30$ ۷
$=\sqrt{2}\times\frac{1}{2}=\frac{\sqrt{2}}{2}$

کسر برعکس نوشتی

$\frac{\sqrt{2}\cos 20}{2\sin 30\cos 20}=\sqrt{2}$

(۱٫۵)

$\frac{1+\cos 2\alpha}{2}=\cos^2\alpha$ و $\frac{1-\cos 2\alpha}{2}=\sin^2\alpha \rightarrow 1-2\sin^2 5=\cos 10$ و $2\cos^2 10-1=\cos 20$

$\rightarrow \cos 10\times\cos 20\times\cos 40=\cos 10\times\cos 20\times\cos 40\times\frac{\sin 10}{\sin 10}=\frac{\sin 20}{2\sin 10}\cos 20\times\cos 40=$ ۸
$\frac{\sin 40}{4\sin 10}\times\cos 40=\frac{\sin 80}{8\sin 10}=\frac{\cos 10}{8\sin 10}=\frac{1}{8}\cot 10$

(۲) ✓

$\sin\alpha+3\cos\alpha=2 \rightarrow \sin\alpha=2-3\cos\alpha \rightarrow \sin^2\alpha=4+9\cos^2\alpha-12\cos\alpha$

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

$\rightarrow 10\left(\frac{1+\cos 2\alpha}{2}\right)-12\cos\alpha=-3 \rightarrow 5+5\cos 2\alpha-12\cos\alpha=-3$ ۹

$\rightarrow 5\cos 2\alpha-12\cos\alpha=-8$

(۲) ✓

$-\cos(B+C)$

$\frac{1+\cos A}{2}=\cos^2\frac{A}{2} \rightarrow \sin B\sin C=\frac{1+\cos A}{2}=\frac{1+\cos(180-(B+C))}{2} \rightarrow$

$2\sin B\sin C=1-\cos B\cos C+\sin B\sin C \rightarrow \sin B\sin C+\cos B\cos C=1 \rightarrow$ ۱۰

$\cos(B-C)=1 \rightarrow B-C=0 \rightarrow B=C=72 \rightarrow \hat{A}=180-\hat{B}-\hat{C}=180-144=36$

(۲) ✓