نام و نام خانوادگی .....لیلی...طباطبایی..... پاسخنامه تشریحی تکلیف شماره ۱۵..... کلاس دوازدهم - سه سنبه

$A, C \to \tan(-2x+\frac{\pi}{4}) = 0 \Rightarrow -2x+\frac{\pi}{4} = k\pi \xrightarrow{If\ k=0} -2x+\frac{\pi}{4}=0 \Rightarrow x=\frac{\pi}{8} = C$

$If\ k=1 \Rightarrow -2x+\frac{\pi}{4}=\pi \Rightarrow x = -\frac{3\pi}{8} = A$ $\left.\begin{matrix} C(\frac{\pi}{8},0) \\ A(-\frac{3\pi}{8},0) \end{matrix}\right\}$ $B(0,1)$

$B|_{y}^{\circ} \Rightarrow y_B = \tan(-2\times 0+\frac{\pi}{4}) = 1$

مساحت $\Delta = \frac{1}{2}|x_A(y_B-y_C)+x_B(y_C-y_A)+y_C(y_A-y_B)| = \frac{1}{2}|-\frac{3\pi}{8}+0-\frac{\pi}{8}| = \frac{1}{2}\times\frac{\pi}{2} = \boxed{\frac{\pi}{4}}$ ۱

$x^2-6\sin\alpha|x-\frac{1}{4}\underbrace{\cos^2\alpha}_{1-\sin^2\alpha}=0 \Rightarrow \frac{x^2}{9}-\frac{2}{3}\sin\alpha x-\frac{1}{4}+\frac{\sin^2\alpha}{4}=0 \Rightarrow 9\sin^2\alpha-24\sin\alpha+7=0$

$\sin\alpha = \frac{-b\pm\sqrt{b^2-4ac}}{2a} = \frac{24\pm 16}{18}$ → $x_1=\frac{7}{3}$ غیرقابل قبول

→ $x_2=\frac{1}{3} \checkmark = \sin\alpha$

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

$\Rightarrow 1+\tan^2\alpha = \frac{1}{\cos^2\alpha} = \frac{1}{\frac{8}{9}} = \boxed{\frac{9}{8}}$ ۲

$\log(\sin\alpha)-\log(-\cos\alpha)=\log 3 \Rightarrow \log\left(\frac{\sin\alpha}{-\cos\alpha}\right)=\log 3 \Rightarrow \frac{\sin\alpha}{\cos\alpha} = -3 = \tan\alpha$

$\sin\alpha-\cos\alpha = \cos\alpha\left(\frac{\sin\alpha}{\cos\alpha}-1\right) = \cos\alpha(\tan\alpha-1) = -4\cos\alpha$

$\sin^2\alpha+\cos^2\alpha=1 \Rightarrow (-3\cos\alpha)^2+\cos^2\alpha=1 \Rightarrow 10\cos^2\alpha=1 \Rightarrow \cos\alpha = \pm\frac{1}{\sqrt{10}} \xrightarrow{\text{طبق شکل}} -\cos\alpha>0$

$\cos\alpha<0$

$\sin\alpha-\cos\alpha = -4\cos\alpha = -4\left(\frac{-1}{\sqrt{10}}\right) = \boxed{\frac{2\sqrt{10}}{5}}$ $\Leftarrow = \frac{-1}{\sqrt{10}} \checkmark$ قبل ۳

$\sin^2\theta = x, \cos^2\theta = y \Rightarrow \underbrace{y+x=1}_{y=1-x} \Rightarrow x^2+y=\frac{4}{5} \Rightarrow x^2(1-x)=\frac{4}{5} \Rightarrow x = \frac{5\pm\sqrt{25-20}}{10} = \frac{5\pm\sqrt{5}}{10}$

$\Rightarrow y^2+x = (1-x)^2+x = 1-x+x^2 \Rightarrow If\ x=\frac{5\pm\sqrt{5}}{10} \Rightarrow 1-x+x^2 = \frac{3\pm\sqrt{5}}{10} \Rightarrow 1+\frac{-2\pm 2\sqrt{5}}{10} = 1-\frac{2}{10}\pm\frac{2\sqrt{5}}{10}$

$= \boxed{\frac{2}{5}\pm\frac{\sqrt{5}}{5}}$ ۴

$\sin x\tan x = \frac{\sin^2 x}{\cos x} \Rightarrow \sin x\tan x-\frac{1}{\cos x}>0 \Rightarrow \frac{\sin^2 x-1}{\cos x}>0 \Rightarrow -\cos x>0 \Rightarrow \cos x<0$ (۲)

$2-2\cos^2 x = 2(1-\cos^2 x) = 2\sin^2 x \Rightarrow \frac{3\sin x+\sin x\cos x}{2-2\cos^2 x} \Leftarrow \frac{\sin x(3+\cos x)}{2\sin^2 x}<0$

$\sin x<0$ (۱)

$\boxed{\text{نامساوی ۳}} \Leftarrow$ (۲)، (۱) ۵

لیلی ضیاضیایی

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

$\tan x + \cot x = \frac{\sin x}{\cos x} + \frac{\cos x}{\sin x} = \frac{-3}{2} - \frac{2}{3} = \boxed{\frac{-13}{6}}$ — ۶

$1 + \sin 2\omega = \sin^2 2\omega + \cos^2 2\omega + 2\sin 2\omega \cos 2\omega = (\sin 2\omega + \cos 2\omega)^2$

$\sin 2\omega + \sin 1\omega = 2\sin \frac{2\omega + 1\omega}{2} \cos \frac{2\omega - 1\omega}{2} = 2\sin \frac{1}{2} 1\omega \cos 1\omega = \cos 1\omega$

$\sin 2\omega + \cos 1\omega = \sqrt{2}(\cos 4\omega \sin 2\omega + \sin 4\omega \cos 2\omega) = \sqrt{2}(\sin(2\omega + 4\omega)) = \sqrt{2}\sin 6\omega$

$\sin 6\omega = \cos 1\omega \Rightarrow \frac{\sqrt{2}\cos 1\omega}{\cos 1\omega} = \boxed{\sqrt{2}}$ — ۲

$1 - 2\sin^2 \omega = \cos 1\omega$

$\frac{1 - \tan^2 1\omega}{1 + \tan^2 1\omega} = \cos 4\omega$

$2\cos^2 1\omega - 1 = \cos 2\omega$

$\cos 1\omega \cdot \cos 2\omega \cdot \cos 4\omega \times \frac{2\cos 1\omega}{2\cos 1\omega} = \frac{2\sin 4\omega \cos 4\omega}{2 \times 4 \sin 1\omega} = \frac{\sin 8\omega}{8 \sin 1\omega}$

$= \frac{\cos 1\omega}{8 \sin 1\omega} = \boxed{\frac{1}{8}\cot(1\omega)}$ — ۸

$\sin\alpha = 2 - 3\cos\alpha \Rightarrow (2 - 3\cos\alpha)^2 + \cos^2\alpha = 1 \Rightarrow 10\cos^2\alpha - 12\cos\alpha + 3 = 0 \Rightarrow \cos\alpha =$

$\frac{12 \pm \sqrt{144 - 120}}{20} = \frac{12 \pm \sqrt{24}}{20} = \frac{6 \pm \sqrt{6}}{10}$

$\cos 2\alpha = 2\cos^2\alpha - 1 = 2\left(\frac{6 \pm \sqrt{6}}{10}\right)^2 - 1 = 2\left(\frac{42 \pm 12\sqrt{6}}{100}\right) - 1 = \frac{-4 \pm 6\sqrt{6}}{20}$

$8\cos 2\alpha - 12\cos\alpha = 8\left(\frac{-4 \pm 6\sqrt{6}}{20}\right) - 12\left(\frac{6 \pm \sqrt{6}}{10}\right) = \frac{-4 \pm 6\sqrt{6} - 36 \mp 6\sqrt{6}}{8} = \frac{-40}{8} = \boxed{-8}$ — ۹

$\sin B \cos C = \cos^2 \frac{A}{2} \Rightarrow \sin 72 \sin(108 - A) = \cos^2 \frac{A}{2} \Rightarrow \sin 72 (\sin 72 + A) = \cos^2 \frac{A}{2}$

$A + 72 + C = 180 \Rightarrow C = 108 - A$

$\Rightarrow \sin 72 \sin(72 + A) = \frac{1 + \cos A}{2}$ If $A = 36$ $\sin 72 \sin 108 = \sin^2 72 = \cos^2 18$

$\boxed{A = 36}$ ✓ — ۱۰