نام و نام خانوادگی ...آرین کریمی............ پاسخنامه تشریحی تکلیف شماره ..۱۵... کلاس ....

۱

$x = 0 \to \tan\left(-2\times 0 + \frac{\pi}{4}\right) = \tan\frac{\pi}{4} = 1 = B$

$AC = T \to T = \frac{\pi}{|-2|} = \frac{\pi}{2}$

$\frac{AC \times B}{2} = \frac{\pi}{2} \times \frac{1}{2} \times 1 = \boxed{\frac{\pi}{4}}$

۲

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

$\sin = \frac{1}{3}$ یا $\frac{7}{3} \to$ غ ق ق

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

$\frac{1}{9}$

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

۳

$\log\frac{\sin\alpha}{-\cos\alpha} = \log 3 \to -3\cos\alpha = \sin\alpha \to \underbrace{\sin^2\alpha}_{9\cos^2\alpha} + \cos^2\alpha = 1 \to |\cos\alpha| = \frac{1}{\sqrt{10}}$

$\sin\alpha = \frac{3}{\sqrt{10}}$

$\log x \to x > 0 \Rightarrow \sin\alpha > 0$

$-\cos\alpha > 0 \Rightarrow \cos\alpha < 0$

$\sin\alpha - \cos\alpha = \boxed{\frac{4}{\sqrt{10}} = \frac{2\sqrt{10}}{5}} \leftarrow \sin\alpha = \frac{3}{\sqrt{10}}$ و $\cos\alpha = -\frac{1}{\sqrt{10}}$

۴

$\sin^4\theta + 1 - \sin^2\theta = \frac{4}{5} \xrightarrow{\sin^2\theta = t} t^2 - t + \frac{1}{5} = 0 \to \frac{5 \pm \sqrt{5}}{10}$

$\sin^2 = \frac{5+\sqrt{5}}{10}$ و $\cos^2 = \frac{5-\sqrt{5}}{10}$

$\left(\frac{5-\sqrt{5}}{10}\right)^2 + \frac{5+\sqrt{5}}{10} = \boxed{\frac{4}{5}}$

۵

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

$\sin^2 x$

$-\cos^2 x$

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

$\boxed{\text{ناحیه‌ی سوم}}$

$\frac{\text{۲}}{\sin x} = -\frac{\text{۳}}{\cos x} \Rightarrow -\text{۳}\sin x = \text{۲}\cos x \rightarrow \frac{\sin x}{\cos x} + \frac{\cos x}{\sin x} = -\frac{\text{۲}}{\text{۳}} - \frac{\text{۳}}{\text{۲}} = \boxed{\frac{-\text{۱۳}}{\text{۶}}}$	۶
$\sin \text{۵۰} + \text{۱} = (\sin \text{۲۵} + \cos \text{۲۵})^{\text{۲}} \rightarrow \frac{\sin \text{۲۵} + \cos \text{۲۵}}{\sin \text{۱۰} + \sin \text{۵۰}}$ $\text{۲}\sin\left(\frac{\text{۵۰}+\text{۱۰}}{\text{۲}}\right)\cos\left(\frac{\text{۵۰}-\text{۱۰}}{\text{۲}}\right) = \text{۲}\sin \text{۳۰} \cdot \cos \text{۲۰}° = \cos \text{۲۰}$ $\Big\}$ $\frac{\sin \text{۲۵} + \cos \text{۲۵}}{\cos \text{۲۰}}$ $\sin \text{۲۵} + \cos \text{۲۵} = \frac{\sqrt{\text{۲}}\,\underbrace{\sin(\text{۲۵}+\text{۴۵})}_{\text{۷۰}}\,\cancel{\cos \text{۲۰}}}{\cancel{\cos \text{۲۰}}} = \boxed{\sqrt{\text{۲}}}$	۷
$\text{۱} = \sin^{\text{۲}} x + \cos^{\text{۲}} x \rightarrow \sin^{\text{۲}} \text{۵}° + \cos^{\text{۲}} \text{۵}° - \text{۲}\sin^{\text{۲}} \text{۵}° = \cos^{\text{۲}} \text{۵} - \sin^{\text{۲}} \text{۵} = \cos \text{۱۰}°$ $\text{۲}\cos^{\text{۲}} \text{۱۰}° - \sin^{\text{۲}} \text{۱۰} - \cos^{\text{۲}} \text{۱۰} = \cos^{\text{۲}} \text{۱۰} - \sin^{\text{۲}} \text{۱۰} = \cos \text{۲۰}°$ $\text{۱} - \tan^{\text{۲}} \text{۲۰}° = \frac{\cos^{\text{۲}} \text{۲۰} - \sin^{\text{۲}} \text{۲۰}°}{\cos^{\text{۲}} \text{۲۰}} = \frac{\cos \text{۴۰}}{\cos^{\text{۲}} \text{۲۰}}$ $\text{۱} + \tan^{\text{۲}} \text{۲۰}° = \frac{\text{۱}}{\cos^{\text{۲}} \text{۲۰}}$ $\Big\}$ $\frac{\frac{\cos \text{۴۰}°}{\cancel{\cos^{\text{۲}} \text{۲۰}}}}{\frac{\text{۱}}{\cancel{\cos^{\text{۲}} \text{۲۰}}}} = \cos \text{۴۰}°$ $\frac{\cos \text{۱۰}° \times \cos \text{۲۰}° \times \cos \text{۴۰}° \times \sin \text{۱۰}°}{\sin \text{۱۰}°} \rightarrow \frac{\text{۱}}{\text{۸}} \times \frac{\overset{\cos \text{۱۰}°}{\sin \text{۸۰}°}}{\sin \text{۱۰}°} = \boxed{\frac{\cot \text{۱۰}°}{\text{۸}}}$	۸
$\sin \alpha = \text{۲} - \text{۳}\cos \alpha \xrightarrow{x^{\text{۲}}} \underbrace{\sin^{\text{۲}} \alpha}_{\text{۱}-\cos^{\text{۲}}\alpha} = \text{۴} + \text{۹}\cos^{\text{۲}} \alpha - \text{۱۲}\cos \rightarrow \text{۱۰}\cos^{\text{۲}} \alpha - \text{۱۲}\cos \alpha + \text{۳} = \text{۰}$ $\text{۱۰}\cos^{\text{۲}} \alpha - \text{۱۲}\cos \alpha = -\text{۳}$ $\cos \text{۲}\alpha = \text{۲}\cos^{\text{۲}} \alpha - \text{۱}$ $\rightarrow \text{۵}\cos \text{۲}\alpha - \text{۱۲}\cos\alpha = \underbrace{\text{۱۰}\cos^{\text{۲}} \alpha - \text{۱۲}\cos \alpha}_{-\text{۳}} - \text{۵} = \boxed{-\text{۸}}$	۹
$\text{۲}\sin x \sin y = \cos(x-y) - \cos(x+y)$ $\qquad \cos^{\text{۲}} \frac{A}{\text{۲}} = \frac{\text{۱} + \cos \hat{A}}{\text{۲}}$ $\rightarrow \sin B \sin C = \frac{\text{۱}}{\text{۲}}\left(\cos(B-C) - \cos(B+C)\right)$ $\text{۱} + \cancel{\cos A} = \cos(B-C) - \underbrace{\cos(B+C)}_{+\cos A} \rightarrow B + C = \text{۱۸۰} - A$ $\rightarrow \text{۱} = \cos(B-C) \rightarrow \cos \text{۰}° = \text{۱} \rightarrow B = C = \text{۷۲}° \rightarrow \text{۷۲} \times \text{۲} = \text{۱۴۴}$ $\underbrace{B + C}_{\text{۱۴۴}} = \text{۱۸۰} - A \rightarrow \boxed{A = \text{۳۶}°}$	۱۰