نام و نام خانوادگی ....[illegible].... پاسخنامه تشریحی تکلیف شماره .... کلاس ..یازدهم.(A)..............

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$\cot\alpha = \frac{\cos\alpha}{|\sin\alpha|}$, $\frac{1}{|\cos\alpha|} - \frac{|\sin\alpha|}{\cos\alpha} = 1 - \sin\alpha \Rightarrow \sin\alpha \cdot \cos\alpha > 0$

(یا هیچ (-) در عبارت ضرب نشده یا دو علامت (-) ضرب شده)

$\cot = \frac{\cos}{\sin} \to \sin\alpha > 0$

$\cot a = \frac{\cos\alpha}{\sin\alpha} \to \sin a > 0 \to \cos a > 0 \to$ a در ناحیه اول

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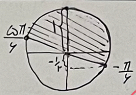
$\sin 2x = \frac{m-1}{4}$ $\quad -\frac{\pi}{12} < x < \frac{5\pi}{12} \to -\frac{\pi}{6} < 2x < \frac{5\pi}{6}$

$\to -\frac{1}{2} < \sin 2x \leq 1$

$-\frac{1}{2} < \frac{m-1}{4} \leq 1$

$-2 < m-1 \leq 4$

$-1 < m \leq 5$ / $m \in (-1, 5]$



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$3\pi < 4x < 4\pi \to \frac{3\pi}{4} < x < \pi \Rightarrow$ ~~tan > 0 , cot > 0~~ $-1 < \tan x < 0$

$\tan x + \frac{1}{\tan x} = -3$ $\begin{cases} \frac{-3+\sqrt{5}}{2} ✓ \\ \frac{-3-\sqrt{5}}{2} \end{cases}$ $\to \sin x =$

$\tan x + \cot x = -3 \to \frac{1}{\sin x \cos x} = -3 \to \sin x \cos x = -\frac{1}{3}$

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

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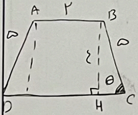

$\cos\theta = \frac{6}{10} \to \frac{CH}{BC} = \frac{6}{10}$ ($BC = 5$) $\to CH = 3 \xrightarrow{\text{فیثاغورس}} BH = 4 \to \sin\theta = \frac{8}{10}$

$S_{\text{ذوزنقه}} = S_{\text{مستطیل}} + S_{\text{دو مثلث}} = 2 \times 4 + 2\left(\frac{3 \times 5 \times 0/8}{2}\right) = 8 + 12 = 20$

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$\tan(285^\circ)\tan(-165^\circ) - \sin(1095^\circ)\cos(255^\circ) =$

$\tan(\frac{3\pi}{2} + 15)\tan(\pi + 15) - \sin(6\pi + 15)\cos(\frac{3\pi}{2} - 15) =$

$-\cot(15^\circ) \times \tan(15^\circ) - (\sin 15^\circ)(-\sin 15^\circ) =$

$-1 - (-\sin^2 15^\circ) = -(1 - \sin^2 15) = -\cos^2 15^\circ \Rightarrow \boxed{k = -1}$

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$A = \sqrt{3} \times \cos(210^\circ) \sin(243^\circ) - \sqrt{2} \times \sin(135^\circ) \cos(153^\circ) =$

$\sqrt{3} \times \frac{-\sqrt{3}}{2} \times \sin(\frac{3\pi}{2} - 27) - \sqrt{2} \times \frac{\sqrt{2}}{2} \times \cos(\pi - 27^\circ) =$

$\frac{-3}{2} \times \cos 27 - \cos 27 =$

$\frac{3}{2} \cos 27^\circ - \frac{2}{2} \cos 27^\circ = \frac{1}{2} \cos 27^\circ \rightarrow A = \frac{1}{2} \cos 27^\circ \rightarrow \frac{A}{\cos 27^\circ} = \boxed{\frac{1}{2}}$

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$16 \cos^2(\frac{\pi}{12}) \times \cos^2(\frac{\pi}{6}) \times \cos^2(\frac{\pi}{3}) \times \cos^2(\frac{2\pi}{3}) =$

$16 \cos^2(\frac{\pi}{12}) \times (\frac{\sqrt{3}}{2} \times \frac{\sqrt{3}}{2}) \times (\frac{1}{2} \times \frac{1}{2}) \times (\frac{-1}{2} \times \frac{-1}{2}) =$ $\qquad \frac{6 + 3\sqrt{3}}{16}$

$16 \cos^2(\frac{\pi}{12}) \times \frac{3}{16 \times 4} = \frac{3}{4} \times \cos^2(\frac{\pi}{12}) = \frac{3}{4} \times \cos^2(\frac{\pi}{3} - \frac{\pi}{4})$

$\frac{3}{4} \times (\cos\frac{\pi}{3} \cos\frac{\pi}{4} + \sin\frac{\pi}{3} \sin\frac{\pi}{4})^2 = \frac{3}{4}(\frac{1}{2} \times \frac{\sqrt{2}}{2} + \frac{\sqrt{3}}{2} \times \frac{\sqrt{2}}{2})^2 = \frac{3}{4}(\frac{\sqrt{2} + \sqrt{6}}{4})^2 =$

$\frac{3}{4} \times (\frac{1}{8} + \frac{3}{8} + \frac{\sqrt{3}}{4}) = \frac{3}{4}(\frac{1}{2} + \frac{\sqrt{3}}{4}) = \frac{3}{8} + \frac{3\sqrt{3}}{16} = \frac{6 + 3\sqrt{3}}{16}$

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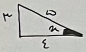
ربع سوم $x \Rightarrow \sin x < 0,\ \cos x < 0,\ \tan x > 0,\ \cot x > 0$

$\frac{1 - \sin x}{1 + \sin x} = 4 \qquad 1 - \sin x = 4 + 4\sin x \longrightarrow \sin x = \frac{-3}{5}$, $\cos x = \frac{-4}{5}$ (در ناحیه سوم $\cos < 0$)



$\tan\frac{x}{2} = \frac{\sin\alpha}{1 + \cos\alpha} = \frac{\frac{-3}{5}}{1 + \frac{-4}{5}} = \boxed{-3}$

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$\frac{1 - \cos\theta}{\sin\theta} = \frac{\sin\theta}{1 + \cos\theta} = \tan\frac{\theta}{2} \longrightarrow \frac{\sin\theta}{1 - \cos\theta} = \cot\frac{\theta}{2}, \quad \frac{1 + \cos\theta}{\sin\theta} = \cot\frac{\theta}{2}$

$\frac{\sin\theta}{1 - \cos\theta} + \frac{1 + \cos\theta}{\sin\theta} = \cot\frac{\theta}{2} + \cot\frac{\theta}{2} = 2\cot\frac{\theta}{2} \Rightarrow k = 2$

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$\cos(\frac{11\pi}{4} + \alpha) = \cos(\frac{8\pi}{4} + \frac{3\pi}{4} + \alpha) = \cos(\frac{3\pi}{4} + \alpha) =$

$\cos(\frac{3\pi}{4} + \alpha) = \cos\frac{3\pi}{4} \cos\alpha - \sin\frac{3\pi}{4} \sin\alpha$

$\cos(\frac{3\pi}{4} + \alpha) = \frac{-\sqrt{2}}{2} \times \frac{-\sqrt{98}}{10} - \frac{\sqrt{2}}{2} \times \frac{\sqrt{2}}{10}$

$\cos(\frac{3\pi}{4} + \alpha) = \frac{+14}{20} - \frac{2}{20} = \frac{12}{20} = \boxed{\frac{3}{5}}$

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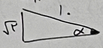
$\sin\alpha = \frac{\sqrt{2}}{10}$



$(\sqrt{2})^2 + x^2 = 100$

$\cos x = \frac{-\sqrt{98}}{10} \xleftarrow{\text{ناحیه دوم}} \cos\alpha = x = \sqrt{100 - 2} = \sqrt{98}$

3) $\frac{\sin^2 x+\cos^2 x}{\sin x\cos x} = -3 \rightarrow \sin x\cos x = \frac{-1}{3} = A$

$\frac{1}{\sin^3 x+\cos^3 x} = \frac{1}{(\sin x+\cos x)(1-\sin x\cos x)}$

$A^2 = \sin^2 + \cos^2 x + 2\sin x\cos x = \frac{1}{3}$

$\rightarrow A \begin{cases} \frac{1}{\sqrt{3}} & \times \\ -\frac{1}{\sqrt{3}} & \checkmark \end{cases}$

$\rightarrow \frac{-9}{4\sqrt{3}} = -0{,}75\sqrt{3}$

4) $A = \sqrt{3} \times \frac{-\sqrt{3}}{2} \times \sin(270-27) - \sqrt{2} \times \frac{\sqrt{2}}{2}\cos(180-27)$

$\rightarrow \frac{5}{2}\cos(27) \rightarrow$ برابر $\frac{5}{2}$