نام و نام خانوادگی ......کیمیا عباسی...... پاسخنامه تشریحی تکلیف شماره ...۲۸... کلاس ...11A...

۱

$\frac{1}{|\cos\alpha|} - \tan\alpha = \frac{1+\sin\alpha}{|\cos\alpha|} \Rightarrow \frac{1}{|\cos\alpha|} - \tan\alpha = \frac{1}{|\cos\alpha|} + \frac{\sin\alpha}{|\cos\alpha|}$

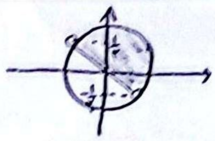
$\xrightarrow{\tan\alpha = \frac{\sin\alpha}{\cos\alpha}} -\frac{\sin\alpha}{\cos\alpha} = \frac{\sin\alpha}{|\cos\alpha|} \Rightarrow |\cos\alpha| = -\cos\alpha \Rightarrow \cos\alpha < 0$

$\frac{|\sin\alpha|}{\cos\alpha} = \frac{-1}{\cot\alpha} \Rightarrow \frac{|\sin\alpha|}{\cos\alpha} = \frac{-\sin\alpha}{\cos\alpha} \Rightarrow |\sin\alpha| = -\sin\alpha \Rightarrow \sin\alpha < 0$

هم Sinα و هم Cosα منفی اند پس در ناحیه سوم قرار دارند

۲

$-\frac{\pi}{12} < x < \frac{5\pi}{12} \Rightarrow -\frac{\pi}{6} < 2x < \frac{5\pi}{6}$



$-\frac{1}{2} < \sin 2x \le 1 \Rightarrow -\frac{1}{2} < \frac{m-1}{4} \le 1 \Rightarrow -2 < m-1 \le 4 \Rightarrow -1 < m \le 5$

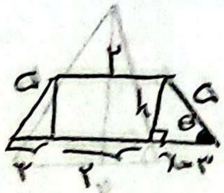
۳

$\tan x + \cot x = -3 \Rightarrow \frac{2}{\sin 2x} = -3 \Rightarrow \sin 2x = -\frac{2}{3} \xrightarrow{+1} 1+\sin 2x = +\frac{1}{3}$

$\Rightarrow (\sin x + \cos x)^2 = \frac{1}{3} \xrightarrow{\frac{3\pi}{4} < x < \pi} \sin x + \cos x = -\frac{1}{\sqrt{3}}$

۴

چون θ زاویه حاده است پس θ زاویه بین ساق و قاعده بزرگ است



$\cos\theta = \frac{6}{10} \Rightarrow \frac{x}{5} = \frac{6}{10} \Rightarrow x = 3 \Rightarrow$ قاعده بزرگ $= 3+3+2 = 8$

$\sin\theta = \frac{8}{10} = \frac{h}{5} \Rightarrow h = 4$

$S = \frac{(8+2)\times 4}{2} = 20$

۵

$\tan(285) = \tan(270+15) = -\cot 15$

$\tan(-165) = -\tan(165) = -\tan(180-15) = -(-\tan 15) = \tan 15$

$\sin(195) = \sin(180+15) = \sin 15$

$\cos(255) = \cos(270-15) = -\sin 15$

$\Rightarrow (-\cot 15)(\tan 15) - (\sin 15)(-\sin 15) = -1 + \sin^2 15 = -\cos^2 15$

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$\cos 210^\circ = \cos(180^\circ + 30^\circ) = -\cos 30^\circ = -\frac{\sqrt{3}}{2}$ $\quad \sin(225^\circ) = \sin(270^\circ - 45^\circ) = -\cos 45^\circ$

$\sin(135^\circ) = \sin(180^\circ - 45^\circ) = \frac{\sqrt{2}}{2}$ $\quad \cos 150^\circ = \cos(180^\circ - 30^\circ) = -\cos 30^\circ$

$\Rightarrow \sqrt{3}\left(-\frac{\sqrt{3}}{2}\right)(-\cos 45^\circ) - \sqrt{2}\left(\frac{\sqrt{2}}{2}\right)(-\cos 45^\circ) = \frac{3}{2}\cos 45^\circ + \cos 45^\circ = \frac{5}{2}\cos 45^\circ$

حاصل $\frac{\frac{5}{2}\cos 45^\circ}{\cos 45^\circ} \Rightarrow$ برابر $2/5$

۷

$14\cos^2\left(\frac{\pi}{12}\right)\cos^2\left(\frac{\pi}{4}\right)\cos^2\left(\frac{\pi}{3}\right)\cos^2\left(\frac{5\pi}{12}\right) = (14+4\sqrt{3})\left(\frac{3}{4}\right)\left(\frac{1}{4}\right)\left(\frac{1}{4}\right) = \frac{42+3\sqrt{3}}{14}$

$\cos^2(15) = \frac{1+\cos 30^\circ}{2} = \frac{1+\frac{\sqrt{3}}{2}}{2} = \frac{2+\sqrt{3}}{4} \xrightarrow{\times 14} 8+4\sqrt{3}$

۸

$\frac{1-\sin x}{1+\sin x} = 4 \Rightarrow 4+4\sin x = 1-\sin x \Rightarrow 5\sin x = -3 \Rightarrow \sin x = -\frac{3}{5}$

$\sin x = \frac{2\tan\frac{x}{2}}{1+\tan^2\frac{x}{2}} = -\frac{3}{5} \Rightarrow 10\tan\frac{x}{2} = -3-3\tan^2\frac{x}{2}$: با توجه به $\sin 2x = \frac{2\tan x}{1+\tan^2 x}$

$\Rightarrow 3\tan^2\frac{x}{2} + 10\tan\frac{x}{2} + 3 = 0 \Rightarrow \left(3\tan\frac{x}{2}+1\right)\left(\tan\frac{x}{2}+3\right) = 0 \Rightarrow$ $\begin{cases} \tan\frac{x}{2} = -\frac{1}{3} \Rightarrow \text{قبول} \\ \tan\frac{x}{2} = -3 \end{cases}$

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$(\sin 2x = 2\sin x\cos x)$

$\frac{\sin x}{1-\cos x} + \frac{1+\cos x}{\sin x} = \frac{2\sin\frac{x}{2}\cos\frac{x}{2}}{2\sin^2\frac{x}{2}} + \frac{2\cos^2\frac{x}{2}}{2\sin\frac{x}{2}\cos\frac{x}{2}} = \frac{\cos\frac{x}{2}}{\sin\frac{x}{2}} + \frac{\cos\frac{x}{2}}{\sin\frac{x}{2}} = \cot\frac{x}{2} + \cot\frac{x}{2}$

$= 2\cot\frac{x}{2}$

۱۰

$\sin^2\alpha + \cos^2\alpha = 1 \Rightarrow 1 - \frac{2}{10} = \cos^2\alpha \Rightarrow \cos = \frac{-\sqrt{8}}{10}$ ربع دوم: $\cos < 0$

$\cos\left(\frac{11\pi}{4} + \alpha\right) = \left(\cos\frac{11\pi}{4}\right)(\cos\alpha) - \left(\sin\frac{11\pi}{4}\right)(\sin\alpha) \xrightarrow{\frac{11\pi}{4} = 3\pi - \frac{\pi}{4}} \left(-\frac{\sqrt{2}}{2}\right)\left(-\frac{\sqrt{8}}{10}\right) - \left(\frac{\sqrt{2}}{2}\right)\left(\frac{\sqrt{2}}{10}\right)$

$= \frac{14}{20} - \frac{2}{20} = \frac{12}{20} = \frac{3}{5}$