نام و نام خانوادگی: علی ربانی   پاسخ تکلیف شماره ۲۸   کلاس یازدهم: A

۲۰ آفرین!

۱- ناحیه اول ✓ ②

$$\frac{1}{\sqrt{\cos^2\alpha}} - \frac{1}{\cot\alpha} = \frac{1-\sin\alpha}{|\cos\alpha|} \Rightarrow \frac{1}{|\cos\alpha|} - \frac{\sin\alpha}{\cos\alpha} = \frac{1-\sin\alpha}{|\cos\alpha|}$$

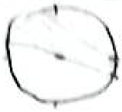
$$\Rightarrow \cos\alpha = |\cos\alpha| \Rightarrow \cos\alpha > 0 \qquad \Rightarrow \cot\alpha = \frac{\cos\alpha}{\sqrt{1-\cos^2\alpha}} = \frac{\cos\alpha}{|\sin\alpha|}$$

$$\frac{\cos}{\sin}$$

$$\Rightarrow \sin\alpha = |\sin\alpha| \Rightarrow \sin\alpha > 0$$

۲- ②

$$-\frac{\pi}{12} < x < \frac{5\pi}{12}$$



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

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

$$\boxed{-1 < m \leq 5}$$

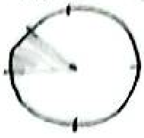
$$m \in \boxed{(-1, 5]}\ ✓$$

۳- ②

$$\tan x + \cot x = -3 \Rightarrow \frac{1}{\sin x\cos x} = -3 \qquad \boxed{\sin x\cos x = -\frac{1}{3}}$$

$$3\pi < 4x < 4\pi \qquad \frac{3\pi}{4} < x < \pi$$

$\sin > 0 \quad \cos < 0$

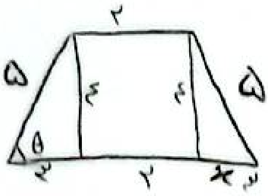


$$(\sin x + \cos x)^2 : 1 + \underbrace{2\sin x\cos x}_{-\frac{2}{3}} = \frac{1}{3}$$

$$\frac{1}{\sin^3 x + \cos^3 x} = \frac{1}{\underbrace{(\sin x + \cos x)}_{-\sqrt{\frac{1}{3}}}\underbrace{(\cancel{\sin^2 x + \cos^2 x} - \sin x\cos x)}_{\frac{1 + \frac{1}{3}}{\frac{4}{3}}}} = \boxed{\frac{-3\sqrt{3}}{4}}\ ✓ \Rightarrow (\sin x + \cos x) = -\sqrt{\frac{1}{3}}$$

زیرا در این ناحیه $\sin < \cos$

۴- ②



$$\cos\theta = 0/6 \Rightarrow x = 0/6 \times 5 = 3$$

$$S_{\text{ذوزنقه}} = \frac{(2+8)\times 4}{2} = \boxed{20}\ ✓$$

۵- ②

$$\begin{array}{r} 1065 \\ 1080 \\ \hline 15 \end{array} \qquad \frac{360}{3}$$

$$k\cos^2 15 = \tan(\cancel{285^\circ})\tan(\cancel{-165^\circ}) - \sin(1065^\circ)\cos(255^\circ)$$

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

$$= -\cos^2 15 \Rightarrow k = \boxed{-1}\ ✓$$

۶- ②

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

$$\sqrt{3} \times -\frac{\sqrt{3}}{2} \times -\cos(27^\circ) - \sqrt{2} \times \frac{\sqrt{2}}{2} \times -\cos(27^\circ) = \frac{3}{2}\cos 27^\circ + \cos 27^\circ = \frac{5}{2}\cos(27^\circ)$$

$$\frac{\frac{5}{2}\cos(27^\circ)}{\cos(27^\circ)} = \frac{5}{2} = \boxed{2/5}\ ✓$$

Scanned with CamScanner

۷- ②

$f\left(\frac{\pi}{۲۴}\right) = ۱۶\cos^۲\left(\frac{۳\pi}{۲۴}\right)\cos^۲\left(\overset{\frac{\pi}{۴}}{\cancel{\frac{۶\pi}{۲۴}}}\right)\cos^۲\left(\overset{\frac{\pi}{۳}}{\cancel{\frac{۱۲\pi}{۲۴}}}\right)\cos^۲\left(\overset{\frac{۲\pi}{۳}}{\cancel{\frac{۲۴\pi}{۲۴}}}\right)$

$\cancel{۱۶} \times \cos^۲\left(\frac{\pi}{۱۲}\right) \times \frac{۳}{۴} \times \frac{۱}{\cancel{۴}} \times \frac{۱}{\cancel{۴}} = \frac{۲+\sqrt{۳}}{۴} \times \frac{۲}{۴} = \boxed{\frac{۶+۲\sqrt{۳}}{۱۶}}$ ✓

$\cos\frac{\pi}{۱۲} = \cos\left(\frac{\pi}{۴} - \frac{\pi}{۶}\right) = \cos\frac{\pi}{۴}\cos\frac{\pi}{۶} + \sin\frac{\pi}{۴}\sin\frac{\pi}{۶} =$

$\frac{\sqrt{۲}}{۲} \times \frac{\sqrt{۳}}{۲} + \frac{\sqrt{۲}}{۲} \times \frac{۱}{۲} = \frac{\sqrt{۶}+\sqrt{۲}}{۴} \xrightarrow{()^۲} \frac{۸+۲\sqrt{۱۲}}{۱۶} = \frac{۲+\sqrt{۳}}{۴}$

$\frac{\sqrt{۶}}{۴} + \frac{\sqrt{۲}}{۴}$

۸- ②

$\frac{۱-\sin x}{۱+\sin x} = ۴ \qquad ۴+۴\sin x = ۱-\sin x$

$۵\sin x = -۳$

$\sin x = -\frac{۳}{۵} \Rightarrow \cos x = -\frac{۴}{۵}$

$\tan\frac{x}{۲} = \frac{۱-\cos x}{\sin x} = \frac{\frac{۹}{\cancel{۵}}}{-\frac{۳}{\cancel{۵}}} = \boxed{-۳}$ ✓

۹- ②

$k\cot\frac{\theta}{۲} = \frac{\sin\theta}{۱-\cos\theta} + \frac{۱+\cos\theta}{\sin\theta} = ۲\cot\frac{\theta}{۲} \Rightarrow k = \boxed{۲}$ ✓

$\cot\frac{\theta}{۲} \qquad \frac{۱}{\tan\frac{\theta}{۲}} = \cot\frac{\theta}{۲}$

۱۰- ②

$\sin\alpha = \frac{\sqrt{۲}}{۱۰}$

$\sin^۲\alpha + \cos^۲\alpha = ۱$

$\frac{۲}{۱۰۰} + \frac{۹۸}{۱۰۰} = ۱ \Rightarrow \cos\alpha = -\frac{\sqrt{۹۸}}{۱۰}$

$\cos\left(\frac{۱۱\pi}{۴} + \alpha\right)$

$\frac{۳\pi}{۴}$

$= \cos\frac{۳\pi}{۴}\cos\alpha - \sin\frac{۳\pi}{۴}\sin\alpha = \frac{۷}{۱۰} - \frac{۱}{۱۰} = \frac{۶}{۱۰} = \boxed{۰٫۶}$ ✓

$-\frac{\sqrt{۲}}{۲} \times -\frac{\sqrt{۹۸}}{۱۰} \qquad - \frac{\sqrt{۲}}{۲} \times \frac{\sqrt{۲}}{۱۰}$

$+\frac{\sqrt{۱۹۶}}{۲۰} \qquad -\frac{۲}{۲۰} = -\frac{۱}{۱۰}$

$+\frac{۱۴}{۲۰} = +\frac{۷}{۱۰}$