۱۸٫۷۵

نام و نام خانوادگی ..... پاسخنامه تشریحی تکلیف شماره ۲۸ کلاس ۶ ..... A

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

حالت اول: $\cos\alpha>0, \sin\alpha>0$: $\frac{1}{\cos\alpha} - \frac{\sin\alpha}{\cos\alpha} = \frac{1-\sin\alpha}{\cos\alpha}$ ✓

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

$\sin\alpha>0$

حالت دوم: $\cos\alpha<0, \sin\alpha>0$: $\frac{-1-\sin\alpha}{\cos\alpha} = \frac{1-\sin\alpha}{-\cos\alpha}$ ✗

حالت سوم: $\cos\alpha<0, \sin\alpha<0$: $\frac{-1+\sin\alpha}{\cos\alpha} = \frac{1-\sin\alpha}{-\cos\alpha}$ ✓

تا حالت اول

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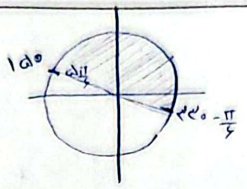
$-\frac{\pi}{12} < x < \frac{5\pi}{12} \Rightarrow -\frac{\pi}{6} < 2x < \frac{5\pi}{6}$



$\sin 2x = \frac{m-1}{2} \Rightarrow -\frac{1}{2} < \sin 2x \leq 1$

$-\frac{1}{2} < \frac{m-1}{2} \leq 1 \Rightarrow -2 < m-1 \leq 2 \Rightarrow -1 < m \leq 3$

$m \in (-1, 3]$

(ج)

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

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

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

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

$-\frac{2\sqrt{2}}{3} = -0.75\sqrt{2}$

(ج)

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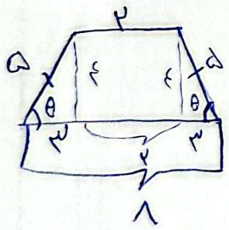

$\cos\theta = \frac{4}{10} = \frac{?}{5} = \frac{3}{5}$

$a^2 + b^2 = c^2 \Rightarrow 3^2 + \square^2 = 5^2 \Rightarrow \square = 4$

مساحت ذوزنقه $= \frac{(\text{قاعده بزرگ} + \text{قاعده کوچک}) \times \text{ارتفاع}}{2} \Rightarrow \frac{(2+8) \times 4}{2} = 10$

(ج)

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$\tan 75^\circ = \tan(270^\circ + 15^\circ) = -\cot 15^\circ$

$\tan(-14^\circ) = \tan(-180^\circ + 15^\circ) = \tan 15^\circ$

$\sin(1095^\circ) = \sin(1080^\circ + 15^\circ) = \sin(4 \times 180^\circ + 15^\circ) = \sin 15^\circ$

$\cos(285^\circ) = \cos(270^\circ - 15^\circ) = -\sin 15^\circ$

$\tan(75^\circ)\tan(-14^\circ) - \sin(1095^\circ)\cos(285^\circ) = -1 + \sin^2 15^\circ = -\cos^2 15^\circ$

$k\cos^2 15^\circ = -\cos^2 15^\circ$

$k = -1$

(ج)

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$\sqrt{3}\cos(210)\sin(240) - \sqrt{2}\sin(135)\cos(135) \Rightarrow$

$\cos(210) = \frac{-\sqrt{3}}{2}$ ربع ٣

$\sin(240) = \sin(270-30) = -\cos 30$

$\sin(135) = \frac{\sqrt{2}}{2}$

$\cos(135) = \cos(180-45) = -\cos 45$

$\sqrt{3} \times -\frac{\sqrt{3}}{2} \times -\cos 30 + (-\sqrt{2} \times \frac{\sqrt{2}}{2} \times -\cos 45) = \frac{3}{2}\cos 30 + \cos 45 \Rightarrow$ ٤

$\frac{3}{2}\cos 30 \Rightarrow \frac{3}{2}\frac{\cos 30}{\cos 30} = \frac{3}{2} \Rightarrow$ ٥

٢, ٣

$f(\frac{\pi}{24}) = 14\cos^2\frac{\pi}{12}\cos^2\frac{\pi}{6}\cos^2\frac{\pi}{4}\cos^2\frac{2\pi}{3} \Rightarrow$

$14\left(\frac{1+\cos\frac{\pi}{6}}{2}\right)\left(\frac{\sqrt{2}}{2}\right)^2\left(\frac{1}{2}\right)^2\left(-\frac{1}{2}\right)^2 \Rightarrow$ ٦

$8\left(1+\frac{\sqrt{3}}{2}\right) \times \frac{3}{4} \times \frac{1}{4} \times \frac{1}{4} = \frac{6+3\sqrt{3}}{16}$ ٧

$\frac{1-\sin x}{1+\sin x} = 5 \Rightarrow 5+5\sin x = 1-\sin x \Rightarrow 6\sin x = -4 \Rightarrow \sin x = -\frac{4}{6} = -\frac{2}{3}$ ربع ٤

$\sin 2\theta = \frac{2\tan\theta}{1+\tan^2\theta} \Rightarrow \sin x = \frac{2\tan\frac{x}{2}}{1+\tan^2\frac{x}{2}} = -\frac{4}{5} \Rightarrow 10\tan\frac{x}{2} = -4 - 4\tan^2\frac{x}{2} \Rightarrow$

$4\tan^2\frac{x}{2} + 10\tan\frac{x}{2} + 4 = 0 \Rightarrow (2\tan\frac{x}{2}+1)(\tan\frac{x}{2}+2) = 0$

$\tan\frac{x}{2} < \begin{cases} -\frac{1}{2} \checkmark \\ -2 \times \end{cases}$ ٨

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

$\frac{\cos\frac{\theta}{2}}{\sin\frac{\theta}{2}} + \frac{\cos\frac{\theta}{2}}{\sin\frac{\theta}{2}} = \cot\frac{\theta}{2} + \cot\frac{\theta}{2} = 2\cot\frac{\theta}{2} = k\cot\frac{\theta}{2}$ ٩

$k = 2$

$\cos(\frac{11\pi}{4} + \alpha) \Rightarrow \cos(11\frac{\pi}{2} + 2\alpha) = \sin 2\alpha$

$\sin 2\alpha = 2\sin\alpha\cos\alpha$ $\cos 2\alpha = \begin{cases} \cos < 0 \\ \sin > 0 \end{cases}$

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

$\sin^2 + \cos^2 = 1 \Rightarrow (\frac{\sqrt{2}}{10})^2 + \cos^2 = 1 \Rightarrow \cos\alpha^2 = \frac{98}{100} = \frac{49}{50} \Rightarrow \cos\alpha = \frac{7}{5\sqrt{2}} = \frac{7\sqrt{2}}{10}$ ١٠

$\sin 2\alpha = 2 \times \frac{\sqrt{2}}{10} \times -\frac{7\sqrt{2}}{10} = -\frac{28}{100} = -\frac{14}{50} = -\frac{7}{25} = -0.28$ ١١

1.) $\cos\left(\frac{11\pi}{12}+\alpha\right) = -\left(\cos\alpha\cos\frac{\pi}{12} + \sin\alpha\sin\frac{\pi}{12}\right)$

$\rightarrow \frac{-\sqrt{2}}{2}(\cos\alpha+\sin\alpha)$ $\qquad \cos\alpha = \frac{-\sqrt{\sqrt{2}}}{10}$

$\hookrightarrow -\frac{\sqrt{2}}{2}\left(\frac{-\sqrt{\sqrt{2}}}{10}+\frac{\sqrt{2}}{10}\right) = \frac{\mu}{\omega}$