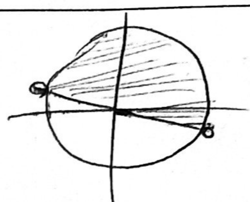
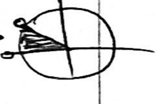
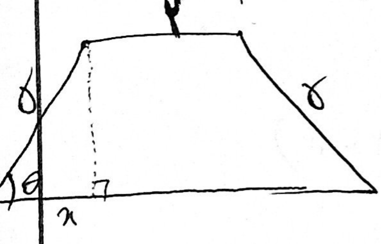
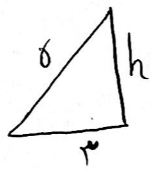
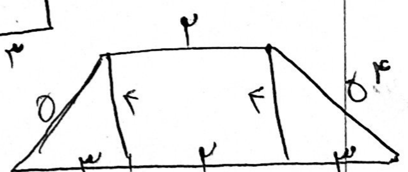
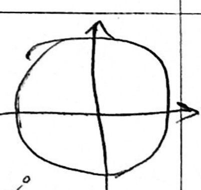
نام و نام خانوادگی ابوالفضل ابوفاضلی .... پاسخنامه تشریحی تکلیف شماره ۲۸ کلاس یازدهم ....

۱	$\frac{1}{\sqrt{\cos^2\alpha}} - \frac{1}{\cot\alpha} = \frac{1-\sin\alpha}{\lvert\cos\alpha\rvert} \to \frac{1}{\lvert\cos\alpha\rvert} - \frac{\sin\alpha}{\cos\alpha} = \frac{1-\sin\alpha}{\lvert\cos\alpha\rvert} \to \cos\alpha = \lvert\cos\alpha\rvert \to \cos\alpha > 0$ $\cot\alpha = \frac{\cos\alpha}{\sin\alpha} = \frac{\cos\alpha}{\lvert\sin\alpha\rvert} \to \sin\alpha = \lvert\sin\alpha\rvert \to \sin\alpha > 0$ $\Longrightarrow \begin{cases}\sin\alpha > 0\\ \cos\alpha > 0\end{cases} \to$ ربع اول
۲	$-\frac{\pi}{12} < x < \frac{5\pi}{12} \xrightarrow{\times 2} -\frac{\pi}{6} < 2x < \frac{5\pi}{6} \longrightarrow$  $\Longrightarrow -\frac{1}{2} < \sin 2x \leq 1 \Longrightarrow -\frac{1}{2} < \frac{m-1}{4} \leq 1 \Longrightarrow -2 < m-1 \leq 4$ $\Longrightarrow -1 < m \leq 5$
۳	$\tan x + \cot x = -3 \Longrightarrow \frac{\sin x}{\cos x} + \frac{\cos x}{\sin x} = -3 \to \frac{\sin^2 x + \cos^2 x}{\sin x \cos x} = -3$ $\to 1 = -3\sin x\cos x \to \sin x\cos x = -\frac{1}{3}$ $\frac{1}{\sin^3 x + \cos^3 x} = \frac{1}{(\sin x + \cos x)(\sin^2 x + \cos^2 x + \sin x\cos x)} = \frac{1}{(\sin x + \cos x)(1+\frac{1}{3})} = \frac{1}{\frac{4}{3}(\sin x + \cos x)}$ $(\sin x + \cos x)^2 = \sin^2 x + \cos^2 x + 2\sin x\cos x = 1 - \frac{2}{3} = \frac{1}{3} \to \sin x + \cos x = \pm\sqrt{\frac{3}{3}} \xrightarrow{\text{منفی}}$  $\Longrightarrow \frac{1}{\frac{4}{3}(-\frac{\sqrt{3}}{3})} = \frac{9}{-4\sqrt{3}} = -\frac{3\sqrt{3}}{4}$
۴	 $\cos\theta = \frac{x}{5} = 0/6 \to x = 3 \Longrightarrow$  $\to h^2 + (3)^2 = 5^2 \to h = 4 \Longrightarrow$  $\Longrightarrow S_{\text{ذوزنقه}} = \frac{4(2+8)}{2} = 20$
۵	$\tan(270+18)\tan(18-180) - \sin(6\times 180 + 18)\cos(270-18) =$  $-\cot(18^\circ)\tan(18^\circ) - \sin(18^\circ)(-\sin 18^\circ) = -1 + \sin^2 18^\circ = -\cos^2 18^\circ$ $\Longrightarrow -\cos^2 18^\circ = K\cos^2 18^\circ \longrightarrow K = -1$

$A = \sqrt{۳}\,Cos(۲۱۰)\,Sin(۲۴۳) - \sqrt{۲}\,Sin(۱۳۵)\,Cos(۱۵۳) \xrightarrow[Sin\,۱۳۵ = \frac{\sqrt{۲}}{۲}]{Cos\,۲۱۰ = -\frac{\sqrt{۳}}{۲}}$

$A = \sqrt{۳}\left(-\frac{\sqrt{۳}}{۲}\right) Sin(۲۷۰-۲۷) - \sqrt{۲}\left(\frac{\sqrt{۲}}{۲}\right) Cos(۱۸۰-۲۷) = -\frac{۳}{۲}(-Cos\,۲۷^\circ) - (-Cos\,۲۷^\circ) =$

$\frac{۳}{۲} Cos\,۲۷^\circ + Cos\,۲۷^\circ = ۲/۵\, Cos\,۲۷^\circ \longrightarrow \frac{A}{Cos\,۲۷^\circ} = \frac{۲/۵\, Cos\,۲۷^\circ}{Cos\,۲۷^\circ} = ۲/۵$ ۶

برابر

$f(x) = ۱۶\, Cos^۲(۳x)\, Cos^۲(۶x)\, Cos^۲(۱۲x)\, Cos^۲(۲۴x)$

$f\left(\frac{\pi}{۳۶}\right) = ۱۶\, Cos^۲\left(\frac{\pi}{۱۲}\right) Cos^۲\left(\frac{\pi}{۶}\right) Cos^۲\left(\frac{\pi}{۳}\right) Cos^۲\left(\frac{۲\pi}{۳}\right) \xrightarrow{Cos^۲\alpha = \frac{1 + Cos\,۲\alpha}{۲}}$

$f\left(\frac{\pi}{۳۶}\right) = ۱۶\left(\frac{1 + Cos\frac{\pi}{۶}}{۲}\right)\left(\frac{\sqrt{۳}}{۲}\right)^۲\left(\frac{1}{۲}\right)^۲\left(-\frac{1}{۲}\right)^۲ = \cancel{۱۶}\left(\frac{1+\frac{\sqrt{۳}}{۲}}{۲}\right)\left(\frac{۳}{۴}\right)\cancel{\left(\frac{1}{۴}\right)}\cancel{\left(\frac{1}{۴}\right)}$ ۷

$= \frac{۶ + ۳\sqrt{۳}}{۱۶}$

$\frac{1 - Sin\,x}{1 + Sin\,x} = ۴ \longrightarrow 1 - Sin\,x = ۴ + ۴\,Sin\,x = -۳ = ۵\,Sin\,x \longrightarrow Sin\,x = -\frac{۳}{۵} \xrightarrow{ربع سوم}$

$Sin^۲x + Cos^۲x = 1 \longrightarrow Cos^۲ = \pm\frac{۴}{۵} \xrightarrow[ربع سوم]{منفی} Cos\,x = -\frac{۴}{۵}$

$Sin\,۲\alpha = \frac{۲\tan\alpha}{1 + \tan^۲\alpha} \longrightarrow Sin\,x = \frac{۲\tan\frac{x}{۲}}{1 + \tan^۲\frac{x}{۲}} \xrightarrow{\tan\frac{x}{۲} = t} -\frac{۳}{۵} = \frac{۲t}{1 + t^۲}$ ۸

$\longrightarrow ۳t^۲ + ۳ = -۱۰t \longrightarrow ۳t^۲ + ۱۰t + ۳ = ۰ \longrightarrow (۳t+1)(t+۳) = ۰ \longrightarrow t = -\frac{1}{۳}$ × غ‌ق

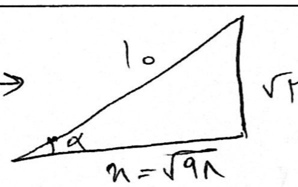
$\boxed{t = -۳}$ ✓

$\frac{Sin\,\theta}{1 - Cos\,\theta} + \frac{1 + Cos\,\theta}{Sin\,\theta} = \frac{Sin^۲\theta + 1 - Cos^۲\theta}{(1 - Cos\,\theta)(Sin\,\theta)} = \frac{Sin^۲\theta + Sin^۲\theta + \cancel{Cos^۲\theta} - \cancel{Cos^۲\theta}}{(1 - Cos\,\theta)(Sin\,\theta)} = \frac{۲\,Sin^{\cancel{۲}}\theta}{(1 - Cos\,\theta)\cancel{(Sin\,\theta)}}$

$= \frac{۲\,Sin\,\theta}{1 - Cos\,\theta} \xrightarrow{\theta = ۶۰^\circ} \frac{۲\left(\frac{\sqrt{۳}}{۲}\right)}{1 - \left(\frac{1}{۲}\right)} = \frac{\sqrt{۳}}{\frac{1}{۲}} = \frac{۲\sqrt{۳}}{1} = ۲\sqrt{۳} = K\,Cot\frac{(۶۰)}{۲}$ ۹

$\longrightarrow ۲\sqrt{۳} = K\,Cot\,۳۰^\circ = K(\sqrt{۳}) \longrightarrow \boxed{K = ۲}$

$Sin\,\alpha = \frac{\sqrt{۲}}{۱۰} \longrightarrow$



$\longrightarrow (\sqrt{۲})^۲ + x^۲ = ۱۰۰ \longrightarrow x = \sqrt{۹۸}$

$\Longrightarrow Cos\,\alpha = \frac{\sqrt{۹۸}}{۱۰} \xrightarrow{ربع دوم} -\frac{\sqrt{۹۸}}{۱۰}$

$Cos\left(\frac{۱۱\pi}{۴} + \alpha\right) = Cos\frac{۱۱\pi}{۴} Cos\,\alpha - \left(Sin\frac{۱۱\pi}{۴}\right)(Sin\,\alpha) = \left(-\frac{\sqrt{۲}}{۲}\right)\left(-\frac{\sqrt{۹۸}}{۱۰}\right) - \left(\frac{\sqrt{۲}}{۲}\right)\left(\frac{\sqrt{۲}}{۱۰}\right)$ ۱۰

$= \frac{\sqrt{۱۹۶}}{۲۰} - \frac{۲}{۲۰} = \frac{۱۴ - ۲}{۲۰} = \frac{۱۲}{۲۰} = ۰/۶$