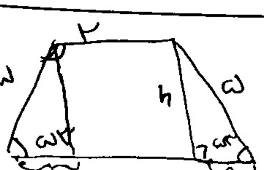
نام و نام خانوادگی ....رها ادهم اصفهانی.... **پاسخنامه تشریحی تکلیف شماره ۲۸ کلاس** یازدهم B ریاضی

۲۰

۱	$\frac{1}{\sqrt{\cos^2\alpha}} - \frac{1}{\cot\alpha} = \frac{1-\sin\alpha}{\lvert\cos\alpha\rvert} \to \frac{1}{\lvert\cos\alpha\rvert} - \frac{\sin\alpha}{\cos\alpha} = \frac{1-\sin\alpha}{\lvert\cos\alpha\rvert} \to \cos\alpha > 0$ $\cot\alpha = \frac{\cos\alpha}{\sqrt{1-\cos^2\alpha}} \to \frac{\cos\alpha}{\sin\alpha} = \frac{\cos\alpha}{\sqrt{1-\cos^2\alpha}} \to \sin\alpha = \sqrt{1-\cos^2\alpha} \to \sin\alpha = \lvert\sin\alpha\rvert \to \sin\alpha > 0$ ناحیه ① ۲
۲	$-\frac{\pi}{12} < x < \frac{5\pi}{12} \to -\frac{\pi}{6} < 2x < \frac{5\pi}{6} \to -\frac{1}{2} < \sin 2x \leq 1 \to -\frac{1}{2} < \frac{m-1}{4} \leq 1 \to -2 < m-1 \leq 4$ $\to -1 < m \leq 5$ ۲
۳	$\tan x + \cot x = -3 \to \frac{\sin x}{\cos x} + \frac{\cos x}{\sin x} = -3 \to \frac{\sin^2 x + \cos^2 x}{\sin x\cos x} = -3 \to \frac{1}{\sin x\cos x} = -3 \to \sin x\cos x = -\frac{1}{3}$ $\frac{1}{\cos^3 x + \sin^3 x} = \frac{1}{(\sin x+\cos x)(\underbrace{\sin^2 x - \sin x\cos x + \cos^2 x}_{1+\frac{1}{3}})} \to \frac{1}{\frac{4}{3}(\sin x+\cos x)} = \frac{1}{\frac{4}{3}\times -\frac{1}{\sqrt{3}}} = -\frac{3\sqrt{3}}{4}$ $(\sin x+\cos x)^2 = \underbrace{\sin^2 x + \cos^2 x}_{1} + \underbrace{2\sin x\cos x}_{2\times -\frac{1}{3}} \to \sin x\cos x = \pm\frac{1}{\sqrt{3}} \xrightarrow{\frac{3\pi}{2},\ \pi\ \in x} \sin x\cos x = -\frac{1}{\sqrt{3}}$ ۲
۴	 $S = \frac{4\times(2+8)}{2} = 20$ $h = 5\times\sin 53 = 5\times 0/8 = 4$ $(5)^2-(4)^2 = 25-16 = x^2 = 9 \to x=3$ قاعده بزرگ $= 3+3+2 = 8$ ۲
۵	$\tan(285) = \tan(270+15) = -\cot 15$ $\tan(-165) = -\tan 165 = -\tan(180-15) = \tan 15$ $\sin(1095) = \sin(1080+15) = \sin 15$ $\cos(255) = \cos(270-15) = -\sin 15$ ۲ $\tan(285)\tan(-165) - \sin(1095)\cos(255) = -\cot(15)\tan(15) + \sin^2(15) = -1+\sin^2 15 = -\cos^2 15$ $K = -1$

$\sqrt{3}\cos(210)\sin(127)-\sqrt{2}\sin(135)\cos(1053) = \frac{3}{2}\cos 37 + \cos 37 = 2{,}5\cos 37$ $\sqrt{3}\cos(210)=-\frac{\sqrt{3}}{2}$ ، $\sin(127)=\cos 37$ ، $\sin(135)=\frac{1}{\sqrt{2}}$ ، $\cos(1053)=-\cos 37$ $\frac{2{,}5\cos 37}{\cos 37}=2{,}5$ (۲)	۶
$f(x)=16\cos^2(3x)\cos^2(6x)\cos^2(12x)\cos^2(24x) \xrightarrow{\times\sin^2 3x} f(x)\sin^2 3x = 16\sin^2 3x\cos^2 3x\cos^2 6x\cos^2 12x\cos^2 24x$ $f(x)\sin^2 3x = 4\sin^2 6x\cos^2 6x\cos^2 12x\cos^2 24x = \sin^2 12x\cos^2 12x\cos^2 24x = \frac{1}{4}\sin^2 24x\cos^2 24x = \frac{1}{16}\sin^2 48x \Rightarrow$ (۳) $f(x)=\frac{\sin^2 48x}{16\sin^2 3x}$ $f(\frac{\pi}{36}) = \frac{\sin^2\frac{48\pi}{36}}{16\sin^2\frac{3\pi}{36}} = \frac{\sin^2(\frac{\pi}{3})}{16\sin^2\frac{\pi}{12}} = \frac{\frac{3}{4}}{8(1-\cos\frac{\pi}{6})} = \frac{3}{4\times 8\times(1-\frac{\sqrt{3}}{2})} = \frac{3}{16(2-\sqrt{3})} = \frac{3(2+\sqrt{3})}{16}$	۷
$\frac{1-\sin x}{1+\sin x}=4 \rightarrow 1-\sin x = 4(1+\sin x) \Rightarrow 5\sin x = -3 \Rightarrow \sin x = -\frac{3}{5}$ $\sin x = \frac{2\tan\frac{x}{2}}{1+\tan^2\frac{x}{2}} \Rightarrow -\frac{3}{5} = \frac{2\tan\frac{x}{2}}{1+\tan^2\frac{x}{2}} \Rightarrow -3(1+\tan^2\frac{x}{2}) = 10\tan\frac{x}{2}$ (۲) $3\tan^2\frac{x}{2}+10\tan\frac{x}{2}+3=0$ $\tan\frac{x}{2} = \frac{-10\pm\sqrt{100-36}}{2\times 3} = \frac{-10\pm\sqrt{64}}{6} = \frac{-10\pm 8}{6}$ $\tan\frac{x}{2}$: -3 ، $-\frac{1}{3}$ ✗	۸
$\frac{\sin\theta}{1-\cos\theta}+\frac{1+\cos\theta}{\sin\theta} = \frac{\sin^2\theta+1-\cos^2\theta}{(1-\cos\theta)\sin\theta} = \frac{2\sin^2\theta}{(1-\cos\theta)\sin\theta} = \frac{2\sin\theta}{1-\cos\theta} = \frac{4\sin\frac{\theta}{2}\cos\frac{\theta}{2}}{2\sin^2\frac{\theta}{2}} = \frac{2\cos\frac{\theta}{2}}{\sin\frac{\theta}{2}} = 2\cot\frac{\theta}{2}$ (۲) $k=2$	۹
$A=\cos(\frac{11\pi}{4}+\alpha)=\cos(3\pi-\frac{\pi}{4}+\alpha)=-\cos(\alpha-\frac{\pi}{4}) = -(\cos\alpha\cos\frac{\pi}{4}+\sin\alpha\sin\frac{\pi}{4}) = -\frac{\sqrt{2}}{2}(\sin\alpha+\cos\alpha)$ $\sin\alpha=\frac{\sqrt{2}}{10} \longrightarrow \cos^2\alpha = 1-\sin^2\alpha = 1-\frac{2}{100} = \frac{49}{50} \rightarrow \cos\alpha = -\frac{7}{5\sqrt{2}} = -\frac{7\sqrt{2}}{10}$ (۲) $\xrightarrow[\cos\alpha<0]{\text{ربع دوم}} A = \frac{\sqrt{2}}{2}(\frac{\sqrt{2}}{10}-\frac{7\sqrt{2}}{10}) = \frac{3}{5}$	۱۰