نام و نام خانوادگی ..آرمین شیر...... پاسخنامه تشریحی تکلیف شماره ..۲۸.. کلاس ...یازدهم B...........

۱

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

$$\downarrow$$

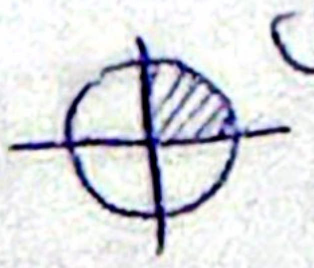
$$\frac{\cos\alpha}{\sin\alpha} = \frac{\cos\alpha}{|\sin\alpha|} \longrightarrow \sin\alpha > 0$$

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

$$\downarrow$$

$$-\frac{\sin\alpha}{\cos\alpha} = \frac{-\sin\alpha}{|\cos\alpha|} \longrightarrow \cos\alpha > 0$$

$$\xrightarrow[\cos\alpha > 0]{\sin\alpha >}$$



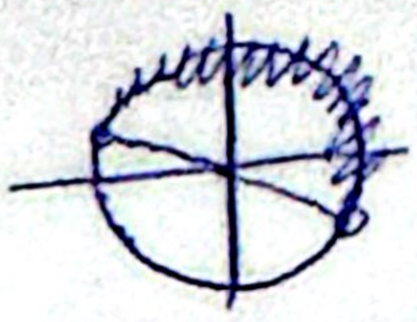
ناحیه اول مثلثاتی

$\boxed{\text{ربع اول}}$

۲

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

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



$$-\frac{1}{2} < \sin 2x \le 1$$

$$\downarrow$$

$$-\frac{1}{2} < \frac{m-1}{4} \le 1$$

$$\downarrow$$

$$-2 < m-1 \le 4$$

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

۳

$$\tan\alpha + \cot\alpha = -3$$

$$\downarrow$$

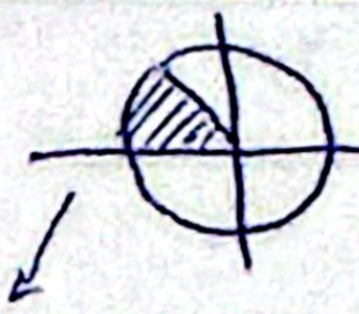
$$\frac{1}{\sin\alpha\cos\alpha} = -3$$

$$\downarrow \sin\alpha\cos\alpha = -\frac{1}{3}$$

$$3\pi < 4\alpha < 4\pi$$

$$\downarrow$$

$$\frac{3\pi}{4} < \alpha < \pi$$



$$\sin\alpha + \cos\alpha < 0$$

$$\frac{1}{\sin^3\alpha + \cos^3\alpha} = A$$

$$\downarrow$$

$$\frac{1}{A} = (\underbrace{\sin\alpha + \cos\alpha}_{-\frac{1}{\sqrt{3}}})(1 - \underbrace{\sin\alpha\cos\alpha}_{-\frac{1}{3}}) = -\frac{4}{3\sqrt{3}}$$

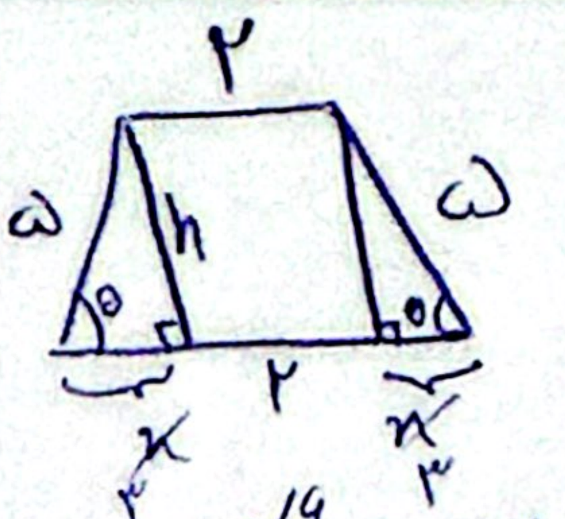
$$\downarrow$$

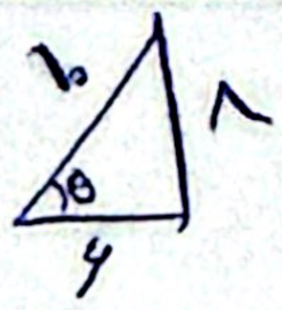
$$\boxed{A = -\frac{3}{4}\sqrt{3}}$$

$$(\sin\alpha + \cos\alpha)^2 = 1 + 2\sin\alpha\cos\alpha = \frac{1}{3}$$

$$\downarrow \sin\alpha + \cos\alpha = -\frac{1}{\sqrt{3}}$$

۴





$$x = 5\underbrace{\cos\theta}_{0.6} = \boxed{3}$$

$$h = 5\underbrace{\sin\theta}_{0.8} = \boxed{4}$$

$$\longrightarrow S = \frac{10(4)}{2} = \boxed{20}$$

۵

$$\tan(285^\circ)\tan(-165^\circ) - \sin(1095^\circ)\cos(255^\circ) = k\cos^2 15$$

$$\downarrow$$

$$\underbrace{-\underbrace{\tan\left(\tfrac{3\pi}{2}+15\right)}_{-\cot 15^\circ}\ \underbrace{\tan(\pi-15)}_{-\tan 15^\circ}}_{-1} \underbrace{-\ \underbrace{\sin(6\pi+15)}_{\sin 15^\circ}\ \underbrace{\cos\left(\tfrac{3\pi}{2}-15\right)}_{-\sin 15^\circ}}_{+\sin^2 15} = k\cos^2 15 \Longrightarrow \boxed{k = -1}$$

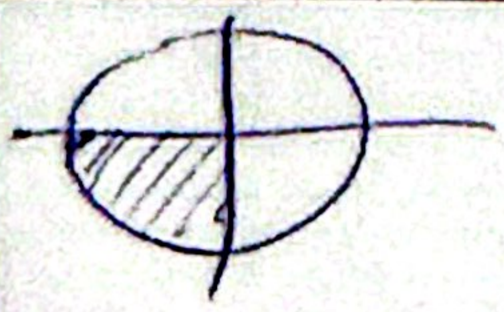
$$\underbrace{-1 + \sin^2 15}_{-\cos^2 15}$$

$$A = \sqrt{3}\cos 210^\circ \sin 243^\circ - \sqrt{2}\sin(135^\circ)\cos 153^\circ$$ ۶

$$A = \underbrace{\sqrt{3}\times\left(-\frac{\sqrt{3}}{2}\right)\times \sin\left(\frac{3\pi}{2}-27^\circ\right)}_{\frac{3}{2}\cos 27^\circ} - \underbrace{\sqrt{2}\times\frac{\sqrt{2}}{2}\cos(\pi-27^\circ)}_{\cos 27^\circ} = \frac{5}{2}\cos 27^\circ \rightarrow \frac{A}{\cos 27^\circ} = \frac{5}{2}$$

$$f\left(\frac{\pi}{24}\right) = 16\cos^2\frac{\pi}{12}\times\underbrace{\cos^2\frac{\pi}{6}}_{\frac{3}{4}}\times\underbrace{\cos^2\frac{\pi}{3}}_{\frac{1}{4}}\times\underbrace{\cos^2\frac{2\pi}{3}}_{\frac{1}{4}} = \frac{3}{4}\cos^2\frac{\pi}{12}$$ ۷

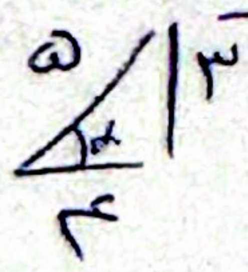
$$\frac{3}{4}\left(\frac{1+\cos\frac{\pi}{6}}{2}\right)\ \frac{\sqrt{3}+2}{4} = \frac{3(\sqrt{3}+2)}{16}$$



$$\frac{1-\sin\alpha}{1+\sin\alpha} = 4 \rightarrow 1-\sin\alpha = 4+4\sin\alpha$$ ۸

$$-3 = 5\sin\alpha \rightarrow \sin\alpha = -\frac{3}{5}$$

$$\cos\alpha = -\frac{4}{5}$$



$$\tan\frac{\alpha}{2} = \frac{\sin\alpha}{1+\cos\alpha} = \frac{-\frac{3}{5}}{1-\frac{4}{5}} = -3$$

$$\tan\alpha = \frac{2\tan\frac{\alpha}{2}}{1-\tan^2\frac{\alpha}{2}} = \frac{3}{4} \rightarrow 3-3\tan^2\frac{\alpha}{2} = 8\tan\frac{\alpha}{2}$$

$$3\tan^2\frac{\alpha}{2} + 8\tan\frac{\alpha}{2} - 3 = 0$$

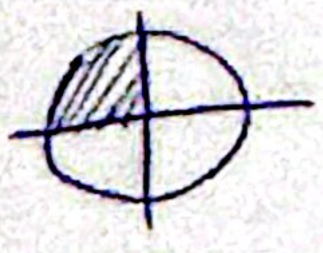
$$\frac{\sin\theta}{1-\cos\theta} + \frac{1+\cos\theta}{\sin\theta} = k\cot\frac{\theta}{2}$$ ۹

$$\left(\tan\frac{\alpha}{2}+3\right)\left(3\tan\frac{\alpha}{2}-1\right)$$

$$\tan\frac{\alpha}{2} = -\frac{9}{3} = -3 \qquad \tan\frac{\alpha}{2} = \frac{1}{3}$$

$$\underbrace{\frac{2\sin\frac{\theta}{2}\cos\frac{\theta}{2}}{2\sin^2\frac{\theta}{2}}}_{\cot\frac{\theta}{2}} + \underbrace{\frac{2\cos^2\frac{\theta}{2}}{2\sin\frac{\theta}{2}\cos\frac{\theta}{2}}}_{\cot\frac{\theta}{2}} = 2\cot\frac{\theta}{2} \Rightarrow k=2$$

$$\cos\left(\frac{11\pi}{4}+\alpha\right) = \cos\left(\frac{5\pi}{2}+\alpha+\frac{\pi}{4}\right) = -\sin\left(\alpha+\frac{\pi}{4}\right) \longrightarrow -\sin\left(\alpha+\frac{\pi}{4}\right) = +\frac{5}{3}$$ ۱۰



$$\sin\alpha+\cos\alpha = \sqrt{2}\sin\left(\alpha+\frac{\pi}{4}\right)$$

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

$$\cos\alpha = -\frac{\sqrt{98}}{10}$$

$$\frac{-\sqrt{98}+\sqrt{2}}{10} = \sqrt{2}\sin\left(\alpha+\frac{\pi}{4}\right)$$

$$\frac{-\sqrt{2}(\sqrt{49}-1)}{\sqrt{2}\times 10} = \sin\left(\alpha+\frac{\pi}{4}\right) \rightarrow \sin\left(\alpha+\frac{\pi}{4}\right) = -\frac{6}{10} = -\frac{5}{3}$$