نام و نام خانوادگی ....آرمین شریفی......   پاسخنامه تشریحی تکلیف شماره ..۲۸.. کلاس ......

۱۹٫۵

۱ (۲)

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

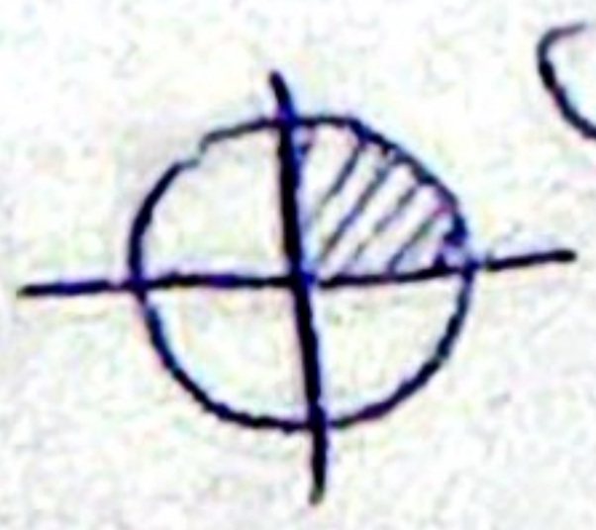
$\sqrt{\cos^2\alpha} = |\cos\alpha|$

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

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

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

$\sin\alpha > 0,\ \cos\alpha > 0 \longrightarrow$

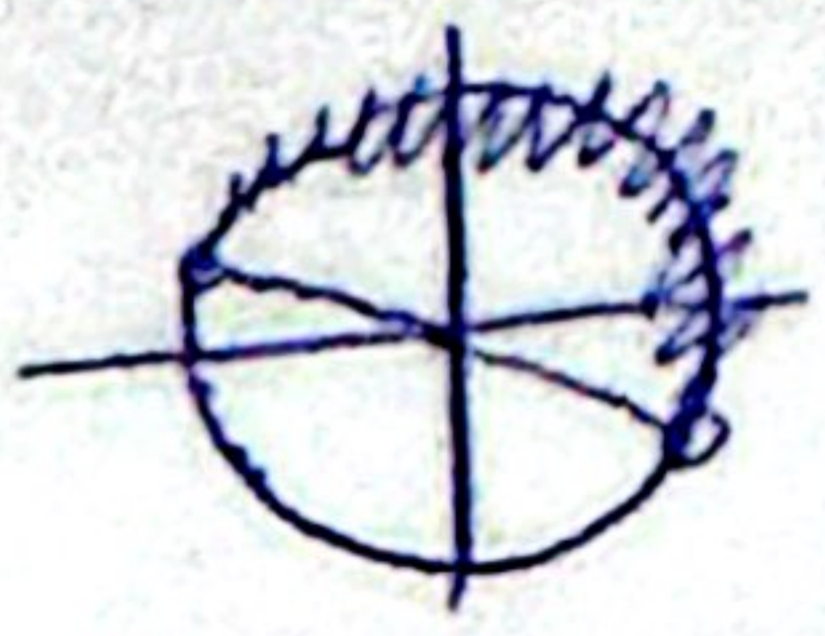


ربع اول

۲ (۲)

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

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



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

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

$-2 < m-1 \le 4$

$-1 < m \le 5$

۳ (۲)

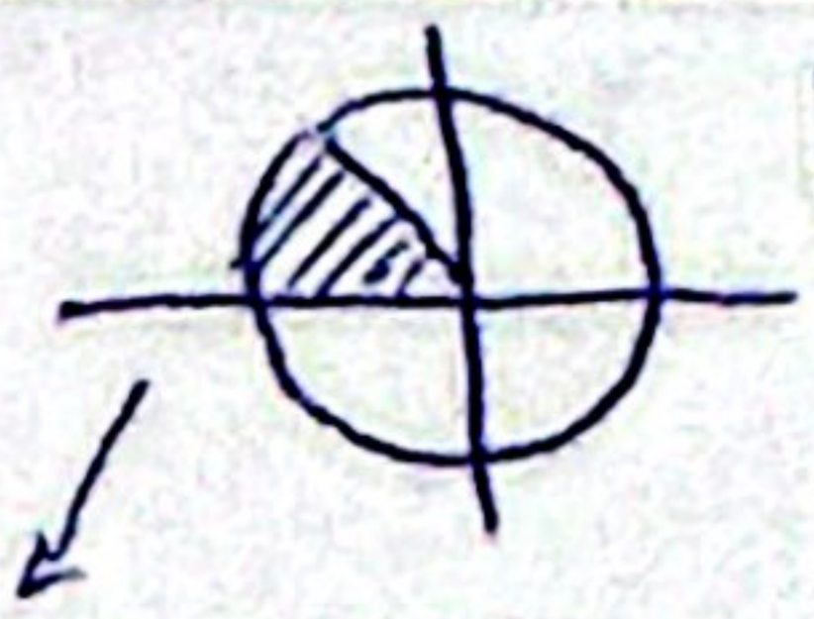
$\tan\alpha + \cot\alpha = -3$

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

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

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

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



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

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

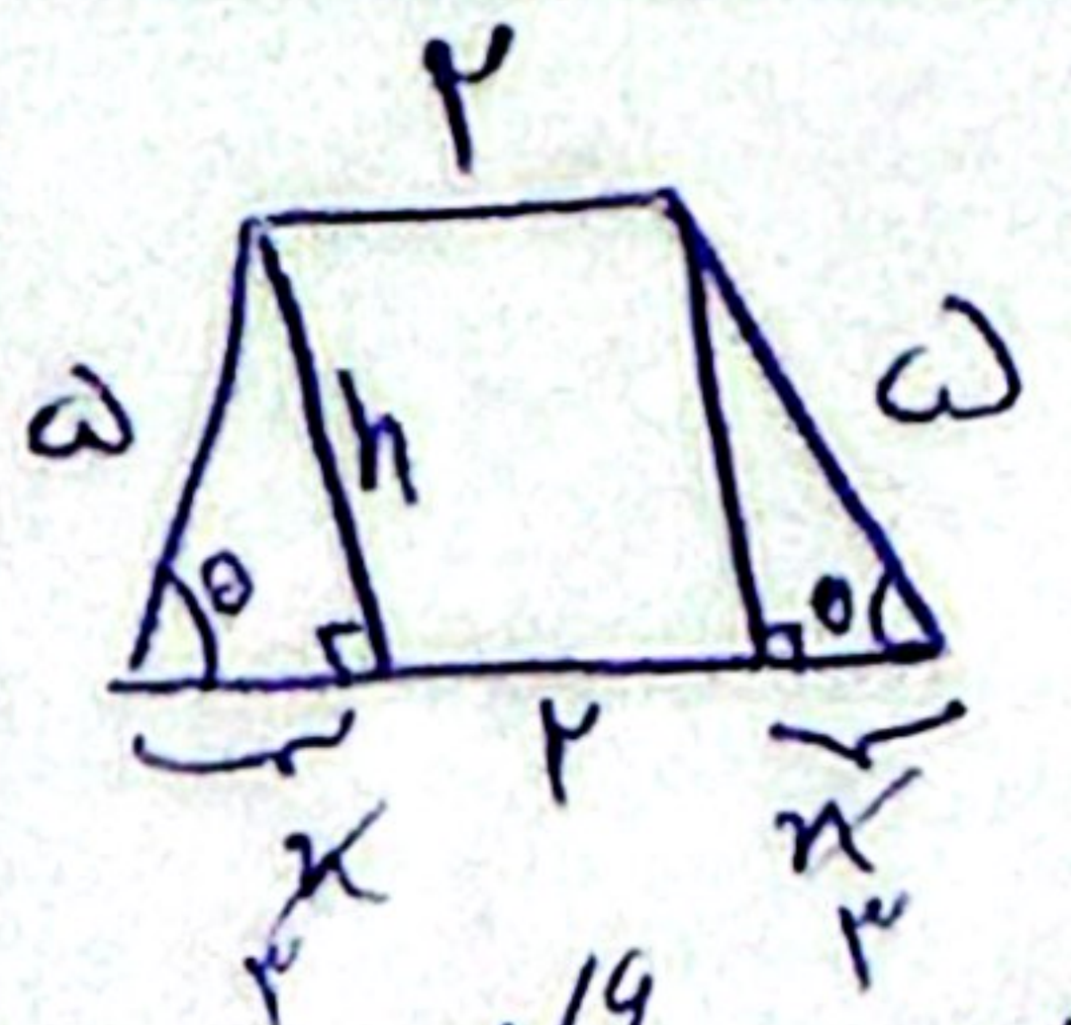
$\frac{1}{A} = \underbrace{(\sin\alpha + \cos\alpha)}_{-\frac{1}{\sqrt{3}}}\underbrace{(1 - \sin\alpha\cos\alpha)}_{\frac{4}{3}} = -\frac{4}{3\sqrt{3}}$

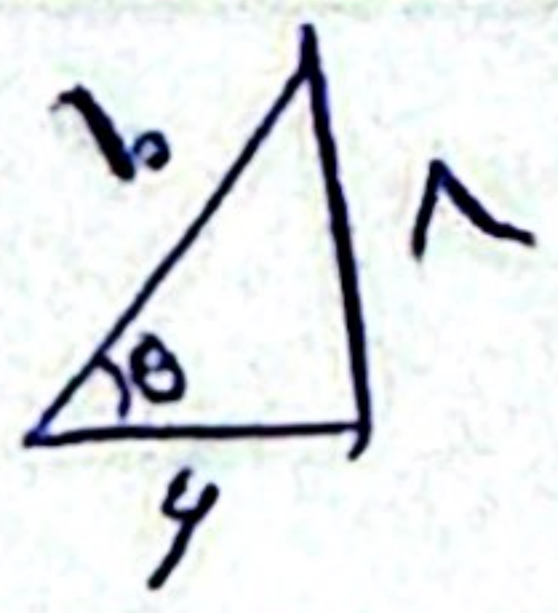
$A = -\frac{3}{4}\sqrt{3}$

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

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

۴ (۲)





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

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

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

۵ (۲)

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

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

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

$A = \sqrt{۳}\cos ۲۱۰^\circ \sin ۲۴۳^\circ - \sqrt{۲}\sin(۱۳۵^\circ)\cos ۱۵۳^\circ$

$A = \sqrt{۳} \times -\frac{\sqrt{۳}}{۲} \times \sin(\frac{۳\pi}{۲} - ۲۷^\circ) - \sqrt{۲} \times \frac{\sqrt{۲}}{۲} \cos(\pi - ۲۷^\circ) = \frac{۵}{۲}\cos ۲۷^\circ \rightarrow \frac{A}{\cos ۲۷^\circ} = \frac{۵}{۲}$

$\underbrace{\quad}_{\frac{۳}{۲}\cos ۲۷^\circ} \qquad \underbrace{\quad}_{\cos ۲۷^\circ}$

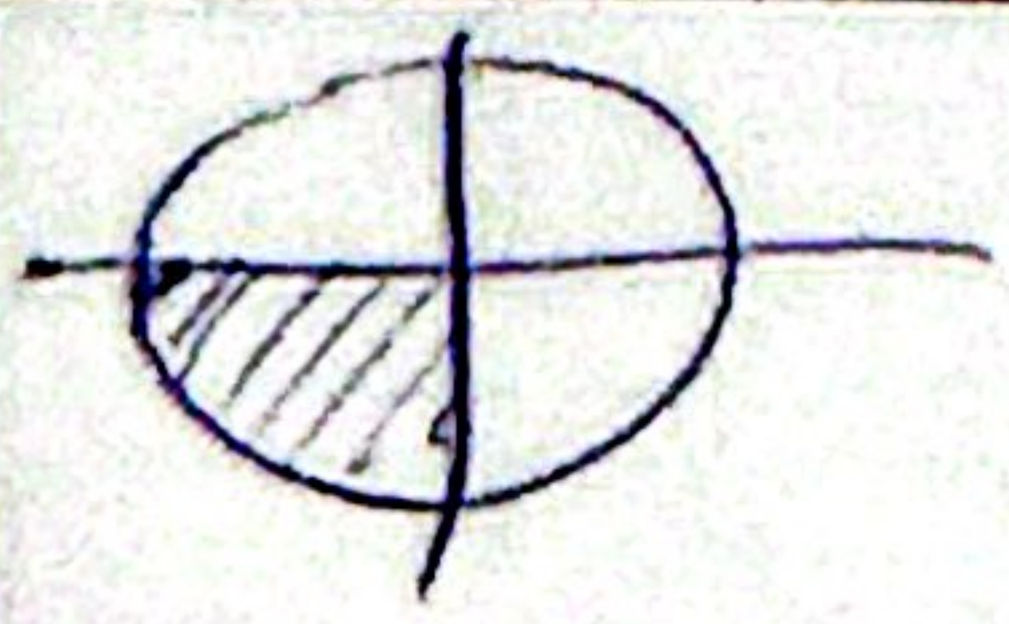
۲ ۶

$f(\frac{\pi}{۲۴}) = ۱۶\cos^۲\frac{\pi}{۱۲} \times \cos^۲\frac{\pi}{۶} \times \cos^۲\frac{\pi}{۳} \times \cos^۲\frac{۲\pi}{۳} = \frac{۳}{۴}\cos^۲\frac{\pi}{۱۲}$

$\cos^۲\frac{\pi}{۶} = \frac{۳}{۴}, \quad \cos^۲\frac{\pi}{۳} = \frac{۱}{۴}, \quad \cos^۲\frac{۲\pi}{۳} = \frac{۱}{۴}$

$\frac{۳}{۴}\left(\frac{۱ + \cos\frac{\pi}{۶}}{۲}\right) \frac{\sqrt{۳}+۲}{۴} = \frac{۳\sqrt{۳}+۶}{۱۶}$

۲ ۷



$\frac{۱ - \sin\alpha}{۱ + \sin\alpha} = ۴ \rightarrow ۱ - \sin\alpha = ۴ + ۴\sin\alpha$

$-۳ = ۵\sin\alpha \rightarrow \sin\alpha = -\frac{۳}{۵}$

$\cos\alpha = -\frac{۴}{۵}$

$\tan\frac{\alpha}{۲} = \frac{\sin\alpha}{۱ + \cos\alpha} = \frac{-\frac{۳}{۵}}{۱ - \frac{۴}{۵}} = -۳$

$\tan\alpha = \frac{۲\tan\frac{\alpha}{۲}}{۱ - \tan^۲\frac{\alpha}{۲}} = \frac{۳}{۴} \rightarrow ۳ - ۳\tan^۲\frac{\alpha}{۲} = ۸\tan\frac{\alpha}{۲}$

$۳\tan^۲\frac{\alpha}{۲} + ۸\tan\frac{\alpha}{۲} - ۳ = ۰$

$(\tan\frac{\alpha}{۲} + ۳)(۳\tan\frac{\alpha}{۲} - ۱)$

$\tan\frac{\alpha}{۲} = -\frac{۹}{۳} = -۳ \qquad \tan\frac{\alpha}{۲} = \frac{۱}{۳}$

۲ ۸

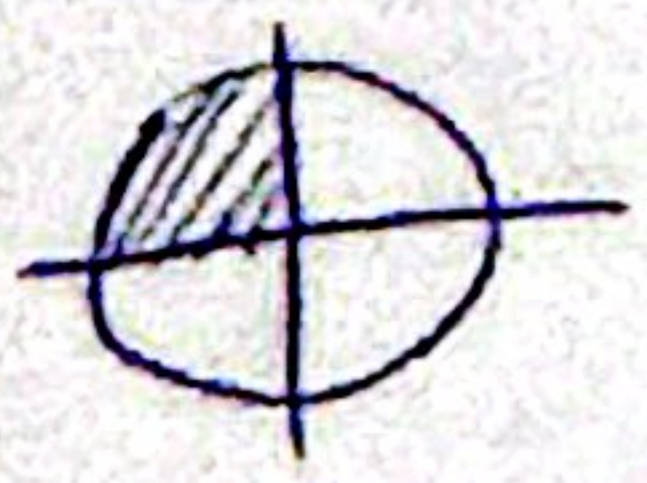
$\frac{\sin\theta}{۱ - \cos\theta} + \frac{۱ + \cos\theta}{\sin\theta} = k\cot\frac{\theta}{۲}$

$\frac{۲\sin\frac{\theta}{۲}\cos\frac{\theta}{۲}}{۲\sin^۲\frac{\theta}{۲}} + \frac{۲\cos^۲\frac{\theta}{۲}}{۲\sin\frac{\theta}{۲}\cos\frac{\theta}{۲}} = ۲\cot\frac{\theta}{۲} \Rightarrow k = ۲$

$\cot\frac{\theta}{۲} \qquad \cot\frac{\theta}{۲}$

۲ ۹

$\cos(\frac{۱۱\pi}{۴} + \alpha) = \cos(\frac{۵\pi}{۲} + (\alpha + \frac{\pi}{۴})) = -\sin(\alpha + \frac{\pi}{۴}) \longrightarrow -\sin(\alpha + \frac{\pi}{۴}) = +\frac{۵}{۳}$



$\sin\alpha + \cos\alpha = \sqrt{۲}\sin(\alpha + \frac{\pi}{۴})$

$\sin\alpha = \frac{\sqrt{۲}}{۱۰}$

$\cos\alpha = -\frac{\sqrt{۹۸}}{۱۰}$

$\frac{-\sqrt{۹۸} + \sqrt{۲}}{۱۰} = \sqrt{۲}\sin(\alpha + \frac{\pi}{۴})$

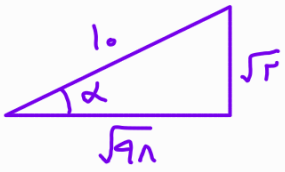
$\frac{-\sqrt{۲}(\sqrt{۴۹} - ۱)}{\sqrt{۲} \times ۱۰} = \sin(\alpha + \frac{\pi}{۴}) \longrightarrow \sin(\alpha + \frac{\pi}{۴}) = -\frac{۶}{۱۰} = -\frac{۵}{۳}$

۱,۵ ۱۰

-۱۰

$$\cos\left(\frac{11\pi}{4}+\alpha\right)=\cos\left(2\pi-\frac{\pi}{4}+\alpha\right)=-\cos\left(\alpha-\frac{\pi}{4}\right)$$

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



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

$$-\frac{\sqrt{2}}{2}\left(\cos\alpha+\sin\alpha\right)=-\frac{\sqrt{2}}{2}\left(-\frac{\sqrt{98}}{10}+\frac{\sqrt{2}}{10}\right)=\frac{3}{5}$$