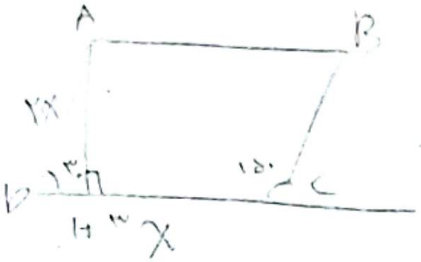
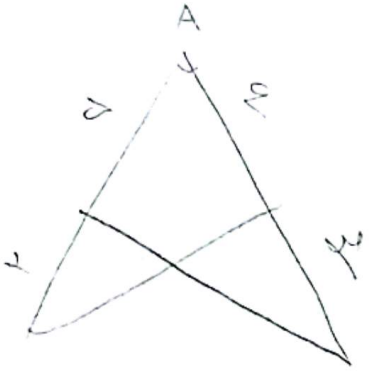


$A D \times \sin 30^\circ = AH$

$\Rightarrow AH = x$

$\Rightarrow x \times 3x = 24 \Rightarrow 3x^2 = 24$

$\Rightarrow x = 2\sqrt{2} \Rightarrow (4x + 3x) \times 2 = 20\sqrt{2}$



$3\sin\hat{A} - 2\sin\hat{A}$

$= 1.5 = \sin\hat{A}$

$\Rightarrow \sin\hat{A} = \frac{1}{\sqrt{5}}$

$\Rightarrow \tan\hat{A} = \sqrt{\frac{\sin^2 A}{1-\sin^2 A}} = \frac{\sqrt{5}}{2}$

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

$\sin\alpha = 0$

$\cos\alpha < 0$

$\frac{|\sin\alpha|}{\cos\alpha} = -\frac{1}{\cot\alpha} \Rightarrow \cot\alpha$ تعریف شده $\Rightarrow \sin\alpha \neq 0$

$\frac{|\sin\alpha|}{\cos\alpha} = -\frac{\sin\alpha}{\cos\alpha} \Rightarrow \sin\alpha < 0$

ناحیه سوم

$\tan\alpha = -\frac{1.5}{2} = -\frac{3}{4}$

$\Rightarrow \tan\left(\frac{\pi}{2} - \alpha\right) = \frac{\sin\left(\frac{\pi}{2} - \alpha\right)}{\cos\left(\frac{\pi}{2} - \alpha\right)} = \frac{\cos(\alpha)}{\sin(\alpha)} = \cot\alpha = -\frac{4}{3}$

(۶)

$$\frac{۳\cos(۲۷۰ - ۲۲) + ۲\sin(۱۸۰ - ۲۲)}{\sin(۱۸۰ + ۲۲) - \cos(۲۷۰ + ۲۲)}$$

$$= \frac{-۳\sin(۲۲) + ۲\sin(۲۲)}{-\sin(۲۲) - \sin(۲۲)} = \frac{۱}{۲}$$

(۷)

$$\cos\alpha = \frac{۲}{۳} \Rightarrow \sin\alpha = -\frac{\sqrt{۵}}{۳} \Rightarrow \tan\alpha = -\frac{\sqrt{۵}}{۲}$$

$$\sin\left(\frac{\pi}{۲} + \alpha\right) = \cos(\alpha)$$

$$\sin(\alpha - \pi) = -\sin(\alpha) \Rightarrow \frac{\sin\alpha + \cos\alpha}{\left|\frac{۵}{۴} - ۱\right|}$$

$$= \frac{\frac{۲ - \sqrt{۵}}{۳}}{\frac{۱}{۴}} = \frac{۸ - ۴\sqrt{۵}}{۳}$$

(۷)

$$\sin^۲\alpha + \cos^۲\alpha = ۱ = ۴\cos^۲\alpha + \cos^۲\alpha$$

$$\Rightarrow |\cos\alpha| = \frac{\sqrt{۵}}{۵}$$

$\cos < ۰$

$$\Rightarrow \boxed{\cos\alpha = -\frac{\sqrt{۵}}{۵}}$$

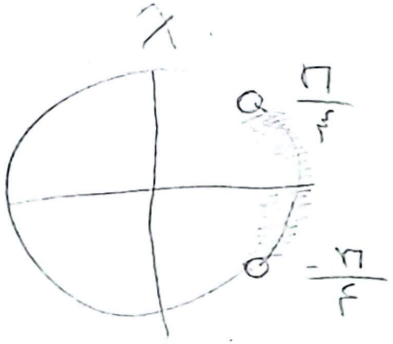
(۸)

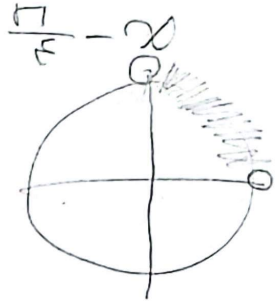
$$y = \frac{-۲m}{m^۲ - ۱}x + \frac{۳}{m^۲ - ۱}$$

$$\frac{-۲m}{m^۲ - ۱} = \tan ۶۰^\circ \Rightarrow \sqrt{۳}m^۲ + ۲m - \sqrt{۳} = ۰$$

$$\Rightarrow \frac{-۲ \pm ۴}{۲\sqrt{۳}} = m \Rightarrow m = \frac{۱}{\sqrt{۳}}, -\sqrt{۳}$$

(9)





$\Rightarrow \tan\left(\frac{\pi}{4}-x\right)$

$\Rightarrow \frac{1-m}{2+m} > 0 \Rightarrow$ $\Rightarrow m \in (-2, 1)$

(10)

$\tan(120) \times \sin(135) + \cos(210) - \cos(120)$

$\frac{\cos^2 30}{\sin 30} + \frac{\sin^2 120}{\cos 120} = 2\left(-\frac{3}{4}+\frac{3}{4}\right)$ (0)