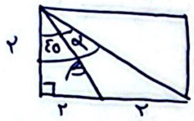
یازدهم رض　　　　تکلیف ۲۷　　　　۱۸　　　　نیوشا هاشم پور

۱

$\frac{۱}{۲} \times ۶ \times \sqrt{۳} \times \sin\alpha = ۴/۵ \rightarrow \sin\alpha = \frac{۹}{۶\sqrt{۳}} = \frac{\sqrt{۳}}{۲}$ ✓

$\sin\alpha = \frac{\sqrt{۳}}{۲} \rightarrow \begin{cases} \alpha = \frac{\pi}{۳} \\ \alpha = \frac{۲\pi}{۳} \end{cases} \rightarrow \frac{\alpha\ max}{\alpha\ min} = \frac{\frac{۲\pi}{\cancel{۳}}}{\frac{\pi}{\cancel{۳}}} = \boxed{۲}$

۲

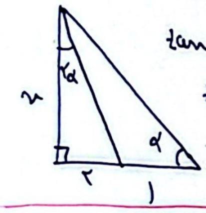


$\beta = ۴۵° + \alpha \rightarrow \alpha = \beta - ۴۵°$ ✓

$\tan = \frac{\tan\beta - \tan ۴۵°}{۱ + \tan\beta . \tan ۴۵} = \frac{۲-۱}{۱+۲} = \frac{۱}{۳} . \rightarrow \underline{\cot\alpha = ۳}$

۳

$\sin ۲\alpha = ۲\sin\alpha\cos\alpha \rightarrow \frac{۲}{[illegible]} =$ ✓



$\tan ۲\alpha = \frac{۲}{x} = \frac{۲\tan\alpha}{۱-\tan^۲\alpha} \rightarrow \frac{۲}{x} = \frac{\frac{۲x}{۳}}{\frac{۹-x^۲}{۹}} \Rightarrow \frac{۱۸x}{۲۷-۳x^۲} = \frac{۲}{x} \rightarrow ۱۸x^۲ = ۵۴ - ۶x^۲$

$۲۴x^۲ = ۵۴$

$۱۲x^۲ = ۲۷ \rightarrow ۴x^۲ = ۹ \rightarrow x^۲ = \frac{۹}{۴}$

$\tan\alpha = \frac{x}{۳}$

$۱ - \frac{x^۲}{۹} = \frac{۹-x^۲}{۹}$

$\tan\alpha = \frac{\frac{\cancel{۳}}{۲}}{\cancel{۳}} = \frac{۱}{۲} \rightarrow \tan\alpha = \frac{۱}{۲}$

$\boxed{\cot\alpha = ۲}$

$\underline{x = \frac{۳}{۲}}$

۴

$AB^۲ = AH^۲ + BH^۲ \rightarrow ۱۶ = AH^۲ + ۹ \qquad AH^۲ = ۷ \rightarrow AH = \sqrt{۷}$ ✓

$\tan(\pi - \alpha) = \frac{\sqrt{۷}}{۳} \rightarrow -\tan\alpha = \frac{\sqrt{۷}}{۳} \qquad \underline{\tan\alpha = -\frac{\sqrt{۷}}{۳}}$

$\underbrace{\sin^۲ x}_{\frac{۱}{۳}} + \underbrace{\sin^۲ x + \cos^۲ x}_{۱} = \frac{۴}{۳}$ ✓

$\sin^۲ x = \frac{۱}{۳} \rightarrow \sin x = \pm\frac{۱}{\sqrt{۳}}$

$\cos^۲ x = \frac{۲}{۳} \rightarrow \cos x = \pm\frac{\sqrt{۲}}{\sqrt{۳}}$

$\tan^۲\alpha = \frac{\sin^۲ x}{\cos^۲ x} = \frac{\frac{۱}{\cancel{۳}}}{\frac{۲}{\cancel{۳}}} = \boxed{\frac{۱}{۲}}$

\boxed{۶}

$x = \frac{\pi}{۲}$ فرض میکنیم $\begin{cases} \sin\alpha = ۱ \\ \cos ۲\alpha = ۰ \end{cases} \rightarrow ۱ - ۲ = \boxed{-۱}$

$$\underbrace{\frac{۱+۰}{۱}}_{۱} - \underbrace{\frac{۰+۴}{۱+۱}}_{۲} = \boxed{-۱}$$

۹

$$۴)\ \frac{\sin^۴\alpha + ۴(۱-\sin^۲\alpha)}{۱+(۱-\sin^۲\alpha)} - \frac{\cos^۴\alpha + ۴(۱-\cos^۲\alpha)}{۱+(۱-\cos^۲\alpha)}$$

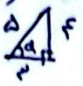
$$= \frac{(۲-\sin^۲\alpha)^۲}{۲-\sin^۲\alpha} - \frac{(۲-\cos^۲\alpha)^۲}{۲-\cos^۲\alpha} = ۲-\sin^۲\alpha - ۲ + \cos^۲\alpha = \cos ۲\alpha$$

\boxed{۷}

$$\sin\left(\frac{۹\pi}{۲}+\alpha\right)\cos\left(\frac{۷\pi}{۲}-\alpha\right) - \tan\left(\alpha - \frac{۳\pi}{۲}\right) = \sin\left(\frac{\pi}{۲}+\alpha\right)\cos\left(\frac{۳\pi}{۲}-\alpha\right) + \tan\left(\frac{۳\pi}{۲}-\alpha\right)$$

ج

$\cos(\alpha)(-\sin(\alpha)) + \cot(\alpha)$

$\tan\alpha = \frac{۴}{۳} \rightarrow$  $\rightarrow \begin{cases} \cos\alpha = -\frac{۳}{۵} \\ \sin\alpha = -\frac{۴}{۵} \\ \cot\alpha = \frac{۳}{۴} \end{cases}$

$$\left(-\frac{۳}{۵}\right)\left(-\left(-\frac{۴}{۵}\right)\right) + \frac{۳}{۴} = -\frac{۱۲}{۲۵} + \frac{۳}{۴} = \frac{۲۷}{۱۰۰} = \boxed{۰/۲۷}$$

\boxed{۸}

$$(\underbrace{۲\cos ۴x}_{\frac{۳}{۲}} + \sqrt{۲}\sin x - \sqrt{۲}\cos x)$$

$$۲\times\left(\underbrace{\frac{\sqrt{۲}}{۲}}_{\cos\frac{\pi}{۴}}\sin x - \underbrace{\frac{\sqrt{۲}}{۲}}_{\sin\frac{\pi}{۴}}\cos x\right) = ۲\sin\left(x-\frac{\pi}{۴}\right)$$

ج

$$\downarrow$$

$$۲\sin -\frac{\pi}{۶} = -۲\sin\frac{\pi}{۶} = -۱$$

$$\frac{۳}{۲} + (-۱) = \boxed{\frac{۱}{۲}} \longleftarrow$$

\boxed{۹}

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

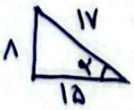
$$\frac{\tan\alpha - \sin\alpha}{\sin\alpha - \cos\alpha} = ?$$

ج

$$\tan^۲\left(\frac{\alpha}{۲}\right) = \frac{۱-\cos\alpha}{۱+\cos\alpha} = \frac{۱}{۱۶} \rightarrow \underbrace{۱۶ - ۱۶\cos\alpha = ۱+\cos\alpha}_{\frac{۱۵}{۱۷} = \cos\alpha}$$

$$\frac{\sin}{\cos} - \sin \quad \frac{\sin - \sin\cos}{\cos} = \frac{\frac{\sin(۱-\cos)}{\cos}}{\frac{\sin-\cos}{۱}} = \frac{\sin(۱-\cos)}{\sin\cos - \cos^۲}$$

$$\frac{\tan\alpha - \sin\alpha}{\sin\alpha - \cos\alpha} = \frac{\frac{۱۶}{۱۵\times۱۷}}{\frac{-۱۱۹}{۱۷\times۱۷}} = \frac{-۱۶}{۱۰۵}$$



$$\rightarrow \underline{\sin\alpha = \frac{۸}{۱۷},\ \tan\alpha = \frac{۸}{۱۵}}$$

\boxed{۱۰}

$\boxed{\text{ربع سوم}} \longleftarrow \quad \frac{\cot\alpha}{\sin\alpha} > ۰ \quad ۲\sin\alpha < \sin ۲\alpha \searrow ۲\sin\alpha\cos\alpha$

$$\downarrow \qquad\qquad \downarrow$$

$$\underline{\cos\alpha > ۰} \qquad \underline{\sin\alpha < ۰}$$

ربع اول و سوم

ج