زهرا جهانی / دبیر دهم فیزیک / تلفن ۲۷

بسمه تعالی

۷٫۷۵

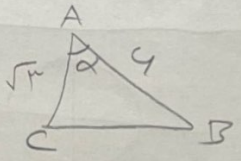
موسسه مالی و اعتباری ثامن الحجج (ع)

(تحت نظارت بانک مرکزی)

تاریخ :.....

شماره :.....

پیوست : .....

۱- 

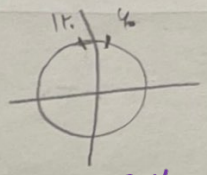
$S = \frac{1}{2} \times 4 \times 4\sqrt{3} \times \sin\alpha$

$\sin\alpha = \frac{4}{4\sqrt{3}} = \frac{\sqrt{3}}{2}$

$\max\alpha = 120$

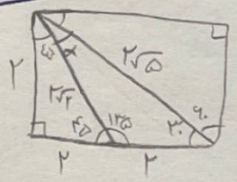
$\min\alpha = 60$

$\Rightarrow \max - \min = 60$



$\frac{\max}{\min} = 2$

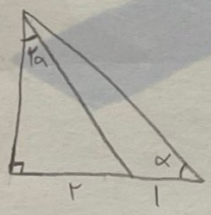
۱٫۷۵

۲- 

$\cot\alpha = ?$

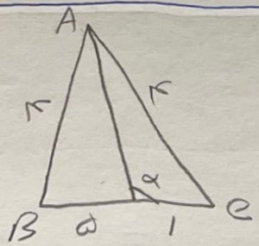
$\cot = \frac{\text{مجاور}}{\text{مقابل}} = \frac{2\sqrt{2}}{2} = \sqrt{2}$

۵

۳- 

$\cot\alpha = ?$

۵

۴- 

$\tan\alpha = ?$

۵

۵- $2\sin^2\alpha + \cos^2\alpha = \frac{4}{3} \rightarrow \sin^2\alpha + 1 = \frac{4}{3} \rightarrow \sin^2\alpha = \frac{1}{3} \rightarrow \cos^2\alpha = \frac{2}{3}$

$\tan^2\alpha = \frac{\sin^2\alpha}{\cos^2\alpha} = \frac{\frac{1}{3}}{\frac{2}{3}} = \frac{1}{2}$

۵

Scanned with CamScanner

$$\frac{\sin^2 + 2\cos^2}{1+\cos^2} - \frac{\cos^2 + 2\sin^2}{1+\sin^2}$$

۹-

X

۵

$\sin^2 = \alpha$

$\cos^2 = \beta$

$$\frac{\alpha^2 + 2\beta}{1+\beta} - \frac{\beta^2 + 2\alpha}{1+\alpha}$$

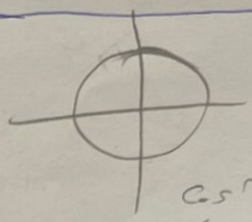
$$(1+\alpha)(\alpha^2 + 2\beta) - (1+\beta)(\beta^2 - 2\alpha)$$

$\tan\alpha = \frac{4}{3}$

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

۷-

۶



$\cos^2$

$-\sin\cos + \frac{\cos}{\sin} = \frac{-\sin^2\cos + \cos}{\sin\alpha}$

$\cos(1-\sin^2) = \cos^3$

$\frac{\cos^3}{\sin} = \frac{\cos^3}{\sin}$

$\cot\alpha = \frac{3}{4} = \frac{\cos}{\sin}$

$\cos^2 \times \cot = \frac{\cos^2}{\sin}$

$\frac{9}{25} \times \frac{3}{4}$

$\cos = \frac{3}{5}$

$\sin = \frac{4}{5}$

$= \boxed{\frac{27}{100}}$

$\alpha = \frac{\pi}{12}$

$\frac{3\cos\frac{\pi}{3}}{\frac{3}{2}} + \sqrt{2}\sin\frac{\pi}{12} - \sqrt{2}\cos\frac{\pi}{12}$

$+\sqrt{2}(\sin\alpha - \cos\alpha)$

۸-

X

۵

$\tan\left(\frac{\alpha}{2}\right) = \frac{1}{4} \rightarrow \tan\alpha = \frac{1}{8}$

۹-

۶

$\sin = \frac{1}{\sqrt{65}}$

$\cos = \frac{8}{\sqrt{65}}$

$$\frac{\frac{1}{8} - \frac{1}{\sqrt{65}}}{\frac{1}{\sqrt{65}} - \frac{8}{\sqrt{65}}} = \frac{\frac{\sqrt{65}-8}{8\sqrt{65}}}{\frac{1-8\sqrt{65}}{\sqrt{65}}} = \frac{\sqrt{65}(\sqrt{65}-8)}{-\sqrt{65}} = \boxed{\frac{8-\sqrt{65}}{7}}$$

$0 < \frac{\cos}{\sin^2} \rightarrow \cos\alpha > 0 \rightarrow$ ربع ۱ و ۴

۱۰-

$\rightarrow$ ۱ صفر $\Rightarrow \alpha \neq \frac{\pi}{2} \rightarrow 2\sin\frac{\pi}{2} = 1$

$\sin 90 = \frac{\sqrt{3}}{2}$

$\rightarrow 2\sin\alpha > \sin 120\alpha \rightarrow$ X

۶

$\Rightarrow$ ۴ $\sim\alpha$

۳) $\tan(۴۵+\alpha) = ۲ = \frac{\tan\alpha+1}{1-\tan\alpha} \rightarrow \tan\alpha = \frac{1}{۳}$

$\rightarrow \cot\alpha = ۳$

۴) $\tan\beta = \frac{AD}{AB} \rightarrow \tan۲\alpha = \frac{۲}{۵۱}$ $\quad \tan C = \frac{AB}{AC} \rightarrow \tan\alpha = \frac{۵۱}{۳}$

$\rightarrow \tan۲\alpha \rightarrow \frac{۲}{۵۱} = \frac{۲ \times \frac{۵۱}{۳}}{1-\frac{۵۱^۲}{۹}} \rightarrow ۵۱ = \frac{۳}{۲}$ $\quad \tan\alpha = \frac{1}{۲}$, $\cot\alpha = ۲$

۴) $AC^۲ = CH^۲ + AH^۲ \rightarrow AH = \sqrt{۷}$ $\quad \tan\alpha' = \frac{AH}{HD} = \frac{\sqrt{۷}}{۲}$

$\tan\alpha' = -\tan\alpha = -\frac{\sqrt{۷}}{۲}$

۵) $\frac{\sin^۴\alpha + ۴(1-\sin^۲\alpha)}{1+(1-\sin^۲\alpha)} - \frac{\cos^۴\alpha + ۴(1-\cos^۲\alpha)}{1+(1-\cos^۲\alpha)}$

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

$= \cos۲\alpha$

۱) $\frac{۳}{۲} + \sqrt{۲}\underbrace{\left(\sin\frac{\pi}{۱۲} + \cos\frac{\pi}{۱۲}\right)}_{A}$ $\quad A^۲ = 1-\sin\frac{\pi}{۶} = 1-\frac{1}{۲} = \frac{1}{۲} \xrightarrow[A<۰]{\sqrt{\ }} A = \frac{-1}{\sqrt{۲}}$

$\frac{۳}{۲} + \sqrt{۲} \times \frac{-1}{\sqrt{۲}} = \frac{1}{۲}$

۹) $\tan\alpha = \frac{۲\tan\frac{\alpha}{۲}}{1-\tan^۲\frac{\alpha}{۲}} = \frac{۸}{۱۵}$ $\quad \cos\alpha = \frac{۱۵}{۱۷}$, $\sin\alpha = \frac{۸}{۱۷}$

$\frac{\tan\alpha - \sin\alpha}{\sin\alpha - \cos\alpha} = \frac{\frac{۸}{۱۵} - \frac{۸}{۱۷}}{\frac{۸}{۱۷} - \frac{۱۵}{۱۷}} = \frac{-۱۴}{۱۰۵}$