

بسمه تعالی

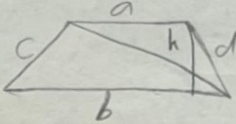
۱۳، ۲۵

موسسه مالی و اعتباری ثامن الحجج (ع)
(تحت نظارت بانک مرکزی)



تاریخ:
شماره:
پیوست:

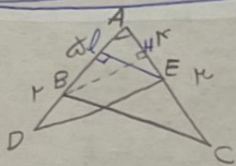
۱- (X)



$$\frac{(a+b)h}{2} = 5\sqrt{2}$$

$$S = \frac{1}{2} \times 4 \times \frac{1}{p} = 5\sqrt{2} \rightarrow p = 3\sqrt{2}$$

$$p = 2 \times 0.5 = 3\sqrt{2}$$



$$\frac{BH}{AH} = \frac{DE}{AE}$$

$$S_{ABC} - S_{ADE} = 1\sqrt{2}$$

$$V \times DE - V \times BH = 1\sqrt{2}$$

$$V(DE - BH) = 1\sqrt{2} \rightarrow DE - BH = \frac{1}{V}$$

$$DE = BH + \frac{1}{V}$$

$$S_{ABC} = \frac{1}{2} \times 4 \times V \times \sin \hat{A}$$

$$S_{ADE} = \frac{1}{2} \times 1 \times V \times \sin \hat{A}$$

$$\Delta S = \frac{1}{2} \times V \times \sin \hat{A} = 1\sqrt{2}$$

$$\sin \hat{A} = \frac{1}{V} \rightarrow \tan \hat{A} = \frac{\sqrt{2}}{3}$$

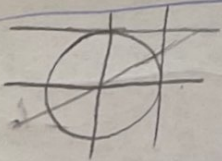
$$\frac{1}{\tan \alpha} - \frac{1 + \sin \alpha}{\cos \alpha} = \tan \alpha \rightarrow \frac{-\sin \alpha}{\cos \alpha} = \frac{\sin \alpha}{\cos \alpha} \rightarrow \cos \alpha < 0$$

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

$$2 \sin \alpha = \cos \alpha - 1 \rightarrow \boxed{\cos \alpha > 0}$$

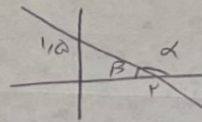
$$\frac{|\sin \alpha|}{\cos \alpha} = -\frac{\sin \alpha}{\cos \alpha} \rightarrow \boxed{\sin \alpha < 0} \rightarrow \boxed{1.3 \text{ رادیان}}$$

۱.۳ رادیان



$$\tan \alpha = \tan(\pi + \alpha)$$

$$\tan \alpha = -\tan(\pi - \alpha)$$



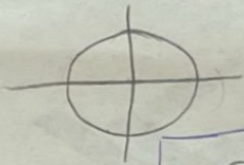
$$\tan \beta = -\tan \alpha$$

$$\tan \beta = \frac{1/2}{1} = 0.5$$

$$\tan \alpha = -0.5$$

$$\Rightarrow \tan(\frac{\pi}{2} - \alpha) = +\cot \alpha \rightarrow \boxed{\cot \alpha = -\frac{2}{1}}$$

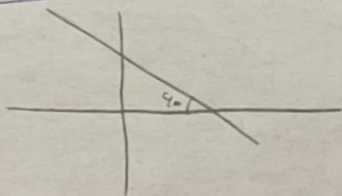
$$\frac{r \cos(\frac{\pi}{r} - \pi) - r \sin(\pi - \pi)}{\sin(\pi + \pi) - \cos(\frac{\pi}{r} + \pi)} = \frac{-r \sin \pi - r \sin \pi}{-\sin \pi - \sin \pi} = \frac{-0 - r}{-1 - 1} = \frac{r}{2} \quad -a$$



$$\cos \alpha = \frac{r}{r} \rightarrow \sin^2 \alpha = 1 - \cos^2 \alpha \rightarrow 1 - \frac{r^2}{r^2} = \frac{a^2}{r^2} \rightarrow \sin \alpha = \frac{\sqrt{a^2 - r^2}}{r} \rightarrow \tan \alpha = \frac{\sqrt{a^2 - r^2}}{r} \quad -b$$

$$\frac{+\cos \alpha + \sin \alpha}{|\tan \alpha - 1|} = \frac{\frac{\sqrt{a^2 - r^2}}{r} + \frac{r}{r}}{\frac{1}{r}} = \frac{r(\sqrt{a^2 - r^2} + r)}{r} = \boxed{\frac{a - r\sqrt{a}}{r}} \quad 9$$

$$\sin \alpha + r \cos \alpha \rightarrow \sin^2 \alpha + \cos^2 \alpha = 1 \rightarrow \cos \alpha \leq 1 \rightarrow \boxed{\cos \alpha = \frac{1}{\sqrt{a}}} \quad -b$$



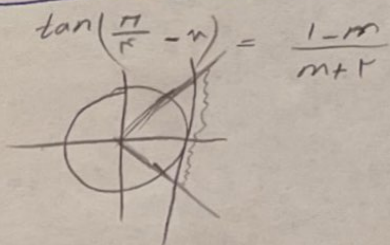
$$(m^2 - 1)y = -rmx + r \rightarrow y = \frac{-rm}{m^2 - 1}x + \frac{r}{m^2 - 1}$$

$$\tan \alpha = \frac{\sqrt{r}}{r} = \frac{-rm}{m^2 - 1} \rightarrow -4m = \sqrt{r}m^2 - \sqrt{r}$$

$$\sqrt{r}m^2 + 4m - \sqrt{r} = 0 \rightarrow m^2 + 4m - r = 0 \rightarrow \frac{-4 \pm \sqrt{16 + 4r}}{2} = -2 \pm \sqrt{4 + r}$$

$$\frac{-r \pm r\sqrt{r}}{\sqrt{r}} \rightarrow \frac{-r \pm r\sqrt{r}}{\sqrt{r}} = -\sqrt{r} \pm r = m_1$$

$$\frac{-r - r\sqrt{r}}{\sqrt{r}} = -\sqrt{r} - r = m_2 \rightarrow m_1 - m_2 = \sqrt{r} + r + \sqrt{r} = \boxed{\frac{r}{\sqrt{r}}}$$



$$\tan(\frac{\pi}{r} - \pi) = \frac{1-m}{m+r}$$

$$x = -\frac{\pi}{r} \rightarrow \tan \frac{\pi}{r} = \frac{1-m}{m+r}$$

$$x = \frac{\pi}{r} \rightarrow \tan 0 = 0$$

$$x = 0 \rightarrow \tan \frac{\pi}{2} = 1$$

$$\boxed{\frac{1}{r} < m < 1}$$

$$\bullet \left(\frac{1-m}{m+r} < 1 \right) \rightarrow \frac{-1}{r} < m$$

$$1-m < m+r \rightarrow -1 < r$$

$$\bullet \left(\frac{1-m}{m+r} > 1 \right) \rightarrow m < 1$$

$$\tan(\frac{r\pi}{r} + \pi) \cos(\pi + \pi) + \tan(\frac{a\pi}{r} + \pi) \sin(\frac{a\pi}{r} + \pi)$$

$$(-\cos \pi - \cos \pi) + (-\cos \pi + \cos \pi)$$

$$\frac{\cos \pi}{\sin \pi} - \frac{\cos \pi}{\sin \pi} = \boxed{0}$$

$$4) -\frac{\pi}{r} < x < \frac{\pi}{r} \rightarrow -\frac{\pi}{r} < x < \frac{\pi}{r}$$

لأن در ربع اول است ← آنرا مثبت ← $\frac{1-m}{r+m} > 0 \rightarrow m \in (r, 1)$