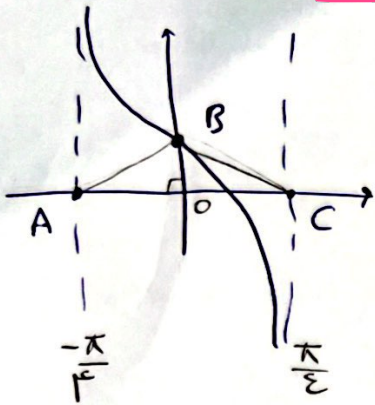


۲. افتاب

بسم خداوندگار

تلف کتبه



$$y = \tan(-x + \frac{\pi}{2})$$

(1)

$$S_{ABC} = ? \quad x=0 \Rightarrow y = \tan \frac{\pi}{2} = 1 \Rightarrow B=1$$

$$\frac{1}{a} = \frac{\pi}{|a|} = \frac{\pi}{1-1} = \frac{\pi}{-2}$$

$$S_{ABC} = \frac{BO \times AC}{2} = \frac{1 \times \frac{\pi}{2}}{2} = \frac{\pi}{4}$$

$$x^2 - (8 \sin \alpha)x - \frac{1}{2} \cos^2 \alpha = 0 \rightarrow \frac{x}{9} - \frac{1}{3} \sin \alpha - \frac{1}{2} (1 - \sin^2 \alpha) = 0$$

$$x = \frac{1}{3} \rightarrow y = 0$$

$$1 + \tan^2 \alpha = ?$$

$$\frac{1}{2} \sin^2 \alpha - \frac{1}{3} \sin \alpha + \frac{1}{9} = 0 \quad x^2 - 4x + 4 = 0$$

$$\frac{14-4}{4} = \frac{10}{4} = \frac{5}{2}$$

$$9 \sin^2 \alpha - 12 \sin \alpha + 4 = 0$$

$$\sin^2 \alpha - 2 \sin \alpha + 1 = 0 \Rightarrow \sin \alpha = 1$$

$$(\sin \alpha - 1)(\sin \alpha - 1) = 0 \Rightarrow \sin \alpha = 1$$

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

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

$$\frac{1}{1 - \frac{1}{9}} = \frac{1}{\frac{8}{9}} = \frac{9}{8}$$

$$\log(\sin \alpha) - \log(-\cos \alpha) = \log 10$$

$$\sin \alpha - \cos \alpha = ? \quad (3)$$

$$\log \frac{\sin \alpha}{-\cos \alpha} = \log 10 \Rightarrow \frac{\sin \alpha}{-\cos \alpha} = 10 \rightarrow -10 \cos \alpha = \sin \alpha \Rightarrow \sin^2 \alpha = 10 \cos^2 \alpha$$

$$\sin^2 \alpha + \cos^2 \alpha = 1 \Rightarrow 1 + \cos^2 \alpha = 1 \rightarrow \cos^2 \alpha = 0$$

$$\Rightarrow \cos \alpha = 0$$

$$\Rightarrow \sin^2 \alpha = 1 \Rightarrow \sin \alpha = 1$$

$$\Rightarrow \sin \alpha - \cos \alpha = \frac{1}{1} - 0 = 1$$

$$\log \log$$

$$\sin \alpha > 0$$

$$-\cos \alpha > 0$$

$$\cos \alpha < 0$$

$$\downarrow$$

$$\text{نصف دوم}$$

$$\sin^2 \theta + \cos^2 \theta = \frac{c}{a}$$

$$(\cos^2 \theta + \sin^2 \theta) = ? \rightarrow \cos^2 \theta + \sin^2 \theta = (\cos^2 \theta) + \sin^2 \theta =$$

$$(1 - \sin^2 \theta) + \sin^2 \theta = \sin^2 \theta - \sin^2 \theta + 1 + \sin^2 \theta = \sin^2 \theta - \sin^2 \theta + 1$$

$$\sin^2 \theta + 1 - \sin^2 \theta = \frac{c}{a}$$

$$\sin^2 \theta - \sin^2 \theta + 1 = \frac{c}{a}$$

$$\frac{r \sin \alpha + \sin \alpha \cos \alpha}{r - r \cos^2 \alpha} < 0 \rightarrow \frac{\sin \alpha (r + \cos \alpha)}{r (1 - \cos^2 \alpha)} < 0 \Rightarrow$$

$$\frac{(r + \cos \alpha)}{r \sin \alpha} < 0 \rightarrow \sin \alpha < 0$$

$$\sin \alpha \tan \alpha - \frac{1}{\cos \alpha} > 0 \rightarrow \frac{\sin^2 \alpha - 1}{\cos \alpha} > 0 \rightarrow \frac{-\cos^2 \alpha}{\cos \alpha} > 0 \Rightarrow \cos \alpha < 0$$

$$\frac{r}{\sin \alpha} + \frac{r}{\cos \alpha} = 0 \Rightarrow \frac{r \cos \alpha + r \sin \alpha}{\sin \alpha \cos \alpha} = 0 \Rightarrow r \sin \alpha = -r \cos \alpha$$

$$\tan \alpha + \cot \alpha = ?$$

$$\tan \alpha + \cot \alpha = \frac{1}{\sin \alpha \cdot \cos \alpha} = \frac{1}{-\frac{r}{\sqrt{13}} \times \frac{r}{\sqrt{10}}} =$$

$$\frac{1}{-\frac{4}{13}} = \frac{-13}{4}$$

$$\Rightarrow \sin \alpha = -\frac{r}{\sqrt{13}} \cos \alpha \Rightarrow$$

$$\cos^2 \alpha + \frac{9}{9} \cos^2 \alpha = 1 \Rightarrow \frac{13}{9} \cos^2 \alpha = 1$$

$$\Rightarrow \cos^2 \alpha = \frac{9}{13} \Rightarrow \cos \alpha = \pm \frac{3}{\sqrt{13}}$$

$$\sin^2 \alpha = \frac{4}{13} \Rightarrow \sin \alpha = \pm \frac{2}{\sqrt{13}}$$

$$y = \frac{\sqrt{1 + \sin \epsilon_0}}{\sin \epsilon_0 + \sin l_0} \times \frac{\sqrt{1 - \sin \epsilon_0}}{\sqrt{1 - \sin \epsilon_0}} = \frac{\sqrt{1 - \sin^2 \epsilon_0}}{\cos \epsilon_0 \sqrt{1 - \sin \epsilon_0}} = \frac{\cos \epsilon_0}{\cos \epsilon_0 (\sqrt{1 - \sin \epsilon_0})} = \frac{1}{\sqrt{1 - \sin \epsilon_0}} \quad (7)$$

$$\sin \epsilon_0 + \sin l_0 = r \sin \frac{\epsilon_0}{r} \times \cos \frac{\epsilon_0}{r} = r \sin \frac{\epsilon_0}{r} \cos \frac{\epsilon_0}{r} = \cos \epsilon_0 \left[\frac{r \sin \frac{\epsilon_0}{r} \cos \frac{\epsilon_0}{r}}{\cos \epsilon_0 \sqrt{1 - \sin \epsilon_0}} \right]$$

$$\frac{r \sin \frac{\epsilon_0}{r}}{\sqrt{1 - \sin \epsilon_0}} = \frac{r \sin \frac{\epsilon_0}{r}}{\sqrt{1 - \cos \epsilon_0}} = \frac{r \sin \frac{\epsilon_0}{r}}{\sqrt{1 - (1 - r \sin^2 \frac{\epsilon_0}{r})}} = \frac{r \sin \frac{\epsilon_0}{r}}{\sqrt{r \sin^2 \frac{\epsilon_0}{r}}} = \sqrt{r} \quad (8)$$

ج اخبر

$$(1 - r \sin^2 \frac{\epsilon_0}{r}) (r \cos^2 \frac{\epsilon_0}{r} - 1) \left(\frac{1 - \tan^2 \frac{\epsilon_0}{r}}{1 + \tan^2 \frac{\epsilon_0}{r}} \right) = \cos l_0 \cos \epsilon_0 \cos \epsilon_0 \quad (9)$$

x sin l_0 / sin l_0

$$\frac{\sin l_0 \cos l_0 \cos \epsilon_0 \cos \epsilon_0}{\sin l_0} = \frac{\frac{1}{r} \sin \frac{\epsilon_0}{r} \cos \frac{\epsilon_0}{r} \cos \epsilon_0}{\sin l_0} = \frac{\frac{1}{r} \sin \epsilon_0 \cos \epsilon_0}{\sin l_0} =$$

$$\frac{\frac{1}{r} \sin \frac{\epsilon_0}{r} \cos l_0}{\sin l_0} = \frac{1}{r} \cot l_0$$

$$\sin \alpha + r \cos \alpha = r$$

$$r \cos \alpha - 1 r \cos \alpha = ?$$

$$\sin \alpha = r - r \cos \alpha \Rightarrow$$

$$\cos^2 \alpha + (r - r \cos \alpha)^2 = 1 \Rightarrow r \cos^2 \alpha - 1 r \cos \alpha + r + \cos^2 \alpha = 1$$

$$\Rightarrow 1 \cdot \cos^2 \alpha - 1 r \cos \alpha + r = 0$$

$$r (r \cos^2 \alpha - 1) - 1 r \cos \alpha = 1 \cdot \cos^2 \alpha - r - 1 r \cos \alpha \Rightarrow$$

$$1 \cdot \cos^2 \alpha - 1 r \cos \alpha = -r$$

$$1 \cdot \cos^2 \alpha - 1 r \cos \alpha - r = -r - r = -2r = -1 \quad (10)$$

ج اخبر

$$\sin \hat{B} \cdot \sin \hat{C} = \cos \frac{\hat{A}}{r}, \quad \hat{B} = 120^\circ$$

$$\hat{A} = ? \quad (1.)$$

$$\cos \frac{\hat{A}}{r} = \frac{1 + \cos \hat{A}}{r}$$

$$\cos(\hat{B} - \hat{C}) = \cos \hat{B} \cos \hat{C} + \sin \hat{B} \sin \hat{C}$$

$$\cos(\hat{B} + \hat{C}) = \cos \hat{B} \cos \hat{C} - \sin \hat{B} \sin \hat{C}$$

$$\left. \begin{array}{l} \cos(\hat{B} - \hat{C}) = \cos \hat{B} \cos \hat{C} + \sin \hat{B} \sin \hat{C} \\ \cos(\hat{B} + \hat{C}) = \cos \hat{B} \cos \hat{C} - \sin \hat{B} \sin \hat{C} \end{array} \right\} \rightarrow \frac{\cos(\hat{B} - \hat{C}) - \cos(\hat{B} + \hat{C})}{r} = \sin \hat{B} \cdot \sin \hat{C}$$

$$\Rightarrow \cos(\hat{B} + \hat{C}) = \cos(180^\circ - \hat{A}) = -\cos \hat{A}$$

$$\frac{\cos(\hat{B} - \hat{C}) + \cos \hat{A}}{r} = \frac{1 + \cos \hat{A}}{r} \Rightarrow \cos(\hat{B} - \hat{C}) = 1 \quad (\cos 0 = 1) \Rightarrow$$

$$\hat{B} - \hat{C} = 0 \Rightarrow \hat{B} = \hat{C} = 120^\circ$$

$$\hat{A} = 180^\circ - \left(\frac{120^\circ + 120^\circ}{120^\circ} \right) = 120^\circ$$