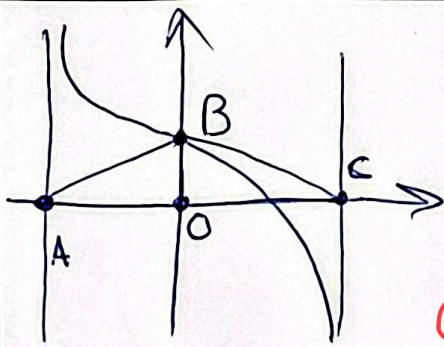




$$A\left(-\frac{\pi}{\lambda}, 0\right)$$

$$C\left(\frac{2\pi}{\lambda}, 0\right)$$

$$B(0, 1)$$

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

$$S_{ABC} = \frac{\frac{\pi}{\lambda} \times 1}{2} = \boxed{\frac{\pi}{2\lambda}}$$

(۲) ✓

$$\frac{\pi}{9} - \frac{2\sin\alpha}{3} - \frac{\cos^2\alpha}{4} = 0 \rightarrow 9\cos^2\alpha + 24\sin\alpha = 1 \rightarrow \cos^2\alpha = 1 - \sin^2\alpha$$

$$-9\sin^2\alpha + 24\sin\alpha - 7 = 0 \rightarrow (24)^2 - (9)(-7)(-1) = 225 \rightarrow \sqrt{225} = 15$$

$$\frac{-24 \pm 15}{-18} \rightarrow \frac{1}{3} \times \frac{1}{\sqrt{2}} \rightarrow \left. \begin{array}{l} 1 + \tan^2\alpha = 1 + \left(\frac{1}{\sqrt{2}}\right)^2 = \left(\frac{3}{2}\right)^2 \end{array} \right\}$$

(۲) ✓

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

$$\cos\alpha = \pm \frac{1}{\sqrt{10}} \rightarrow \sin\alpha = \mp \frac{3}{\sqrt{10}} \left\{ \begin{array}{l} \sin\alpha - \cos\alpha = \left[\begin{array}{l} -\frac{3}{\sqrt{10}} - \frac{1}{\sqrt{10}} = -\frac{4}{\sqrt{10}} \\ \frac{3}{\sqrt{10}} + \frac{1}{\sqrt{10}} = \frac{4}{\sqrt{10}} \end{array} \right] \end{array} \right. \quad 3$$

(۲) ✓

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

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

$$\cos^2\alpha = \cos^2\alpha - \sin^2\alpha \rightarrow \cos^4\alpha + \cos^2\alpha = \cos^2\alpha - \sin^2\alpha + \frac{\pi}{2} \rightarrow \boxed{\cos^2\alpha + \sin^2\alpha = \frac{\pi}{2}}$$

$$2\sin\pi + \frac{\sin^2\pi}{2} < 2\sin^2\pi$$

$$\frac{\sin^2\pi - 1}{\cos\pi} > 0$$

تکثیر سوم

$$2\sin\pi + \sin^2\pi < 2\sin^2\pi$$

$$\frac{-\cos^2\pi}{\cos\pi} > 0 \rightarrow \cos\pi < 0$$

$$\sin\pi < 0 \rightarrow \pi \rightarrow \begin{array}{l} \pi_{\text{کبک}} \\ \pi_{\text{کبک}} \end{array}$$

$$\pi \rightarrow \begin{array}{l} \pi_{\text{کبک}} \\ \pi_{\text{کبک}} \end{array}$$

(۲) ✓

$$\frac{r \cos \pi + r \sin \pi}{\sin \pi \cos \pi} = 0 \rightarrow r \cos \pi = -r \sin \pi \rightarrow \tan \pi = \frac{r}{-r}$$

$$\tan \pi + \cos \pi = \frac{1}{\frac{\sin \pi}{r}} = \frac{r}{\sin \pi} = \frac{\frac{r}{1}}{\frac{r + r \tan \pi}{1 + \tan \pi}} = \frac{r + r \tan \pi}{r \tan \pi}$$

جواب: $\boxed{-\frac{15}{5}}$

$$\frac{\sqrt{1 + \cos 60^\circ}}{\cos 60^\circ + \cos 120^\circ} = \frac{\sqrt{r \cos^2 \frac{\pi}{6}}}{r \cos \frac{\pi}{6} \cos \frac{\pi}{6}} = \frac{\sqrt{r \cos^2 \frac{\pi}{6}}}{\cos \frac{\pi}{6}} = \frac{\sqrt{r} \cos \frac{\pi}{6}}{\cos \frac{\pi}{6}}$$

جواب: $\boxed{\sqrt{r}}$

$$(1 - r \sin^2 \alpha)(r \cos^2 \alpha - 1) \left(\frac{1 - \tan^2 \alpha}{1 + \tan^2 \alpha} \right) = (\cos \alpha)(\cos \alpha)(\cos \alpha)$$

$$(\cos \alpha)(\cos \alpha)(\cos \alpha) = \frac{\cos \alpha}{\sin \alpha} = \frac{1}{\tan \alpha} \Rightarrow \cot \alpha = \frac{\cos \alpha}{\sin \alpha}$$

جواب: $\boxed{\frac{\cos \alpha}{\sin \alpha}}$

$$\sin \pi = r - r \sin \pi \quad \sin^2 \pi + \cos^2 \pi = 1 \rightarrow (r - r \cos \pi)^2 + \cos^2 \pi = 1$$

$$4r \cos^2 \pi - 4r \cos \pi + r = 0$$

$$2 \cos^2 \pi - 1 \cos \pi = 2(r \cos^2 \pi - 1) - 1 \cos \pi = 1 \cos^2 \pi - 1 \cos \pi - 1$$

$$1 \cos^2 \pi - 1 \cos \pi = -r \rightarrow -r - 1 = -1$$

$$\sin B \sin C = \frac{\cos(B - C) + \cos A}{2}$$

$$\cos^2 \frac{A}{2} = \frac{1 + \cos A}{2}$$

$$\frac{\cos(B - C) + \cos A}{2} = \frac{1 + \cos A}{2}$$

$$A = 120^\circ - (x + y) = 35^\circ$$

$$\cos(B - C) = 1 \quad \cos 0^\circ = 1 \quad \boxed{B = C}$$