

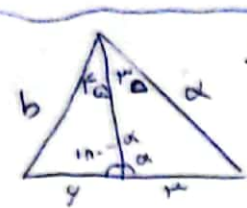
17/19 آفرین !!

تعارف 14

(مفهوم کسینوس)

★ مثلثات ★

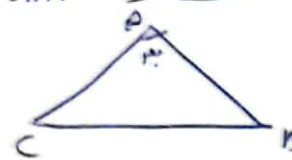
نکات مفید



$$\frac{AB}{AC} \rightarrow \frac{a}{\sin \alpha} = \frac{r}{\sin \frac{\pi}{2}} \rightarrow \frac{a}{\sin \alpha} = r$$

$$\frac{b}{\sin(\pi - \alpha)} = \frac{r}{\sin \frac{\pi}{2}} \rightarrow \frac{b}{\sin \alpha} = r$$

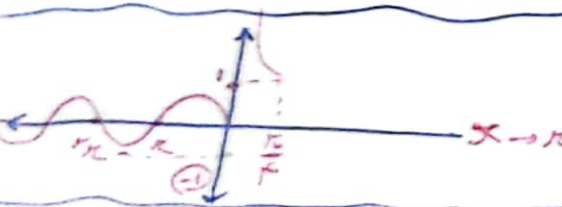
$$\frac{b}{\sin \alpha} = \frac{a}{\sin \alpha} = \frac{r}{\sin \alpha} = r$$



$$S = \frac{1}{2} \times \sin \frac{\pi}{2} \times AC \times AB = \frac{1}{2} \times \log_{10} r \times \log_{10} r = \frac{1}{2} \times \log_{10}^2 r$$

$$r \cos^2 \alpha - r \sin^2 \alpha = r (\cos^2 \alpha - \sin^2 \alpha) \rightarrow r \cos 2\alpha = r \cos^2 \alpha - r \sin^2 \alpha$$

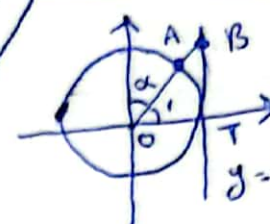
$$\cos 2\alpha = \cos^2 \alpha - \sin^2 \alpha \rightarrow \cos 2\alpha = \cos^2 \alpha - (1 - \cos^2 \alpha) = 2\cos^2 \alpha - 1$$



$$R = [0, +\infty)$$

$$AC^2 = r^2 + r^2 - 2(r)(r)(\cos \frac{\pi}{2}) = 2r^2$$

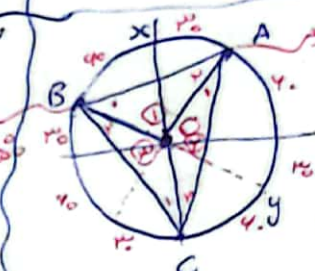
$$AC = \sqrt{2}r \rightarrow P_{ABC} = \sqrt{r} + \sqrt{r} + \sqrt{2}r$$



$$OT = 1 \rightarrow \tan \alpha \rightarrow \cot \alpha$$

$$OT^2 + \cot^2 \alpha = OB^2 \rightarrow 1 + \cot^2 \alpha = OB^2$$

$$\frac{1}{\sin^2 \alpha} = OB^2 \rightarrow \frac{1 - \sin^2 \alpha}{\sin^2 \alpha} = AB$$



$$A_r = B_r \rightarrow \frac{1}{r} \times \widehat{BC} = \frac{1}{r} \times 90^\circ = 45^\circ$$

$$O_1 = 90^\circ \rightarrow S_1 = \frac{1}{2} \times \frac{1}{r} = \frac{1}{2r}$$

$$\hat{A}_1 = \hat{C}_r \rightarrow \frac{1}{r} \times \widehat{AB} = 180^\circ \rightarrow O_r = 180^\circ$$

$$B_r = C_r \rightarrow \frac{1}{r} \times 90^\circ = \frac{1}{r} \times \widehat{AC} = 90^\circ \rightarrow \hat{O}_r = 180^\circ \rightarrow S_r = \frac{1}{2} \times \frac{\sqrt{2}}{r} \times 1 = \frac{\sqrt{2}}{2r}$$

$$S_{\text{کل}} = \frac{1}{2r} + \frac{1}{2r} + \frac{\sqrt{2}}{2r} = \frac{1 + \sqrt{2}}{2r}$$

$$\frac{BC}{\sin \frac{\pi}{2}} = \frac{1}{\sin \frac{\pi}{2}} \rightarrow BC = \sqrt{2}$$

$$\frac{AC}{\sin \frac{\pi}{2}} = \frac{1}{\sin \frac{\pi}{2}} \rightarrow AC = \sqrt{2}$$

$$AC = \frac{\sqrt{2}(\sqrt{2} - \sqrt{2})}{2} = \frac{\sqrt{2}}{2} - 1$$

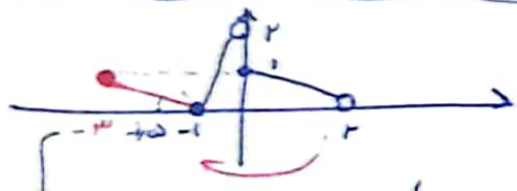
$$\frac{AB}{\sin \frac{\pi}{2}} = \frac{1}{\sin \frac{\pi}{2}} \rightarrow AB = \sqrt{2}$$

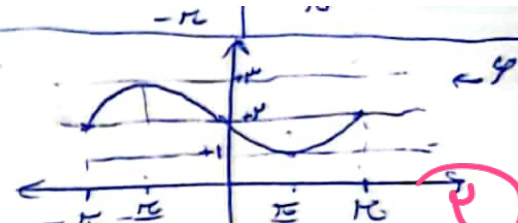
$$\sin(\frac{\pi}{2} - \frac{\pi}{2}) = \frac{\sqrt{2}}{2} \times \frac{\sqrt{2}}{2} - \frac{\sqrt{2}}{2} \times \frac{\sqrt{2}}{2} = \frac{\sqrt{2}}{2}(\sqrt{2} - \sqrt{2})$$

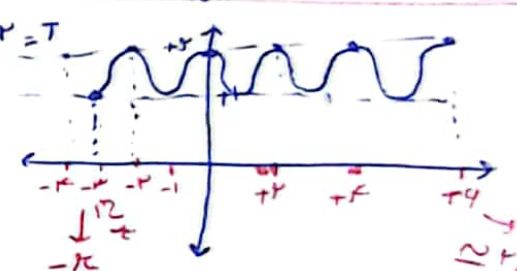
$$\text{مساحت} = \frac{\sqrt{2}}{2} - 1 + \sqrt{2} - \sqrt{2}$$



$f(x) = r \cos rx - 1 = 0 \rightarrow f(x) = r \cos bx + c$ ← سوال 9
 $\rightarrow \cos rx = \frac{1}{r}$
 $\tan x + 1 = \frac{1}{\cos rx} \rightarrow \tan^2 x + 1 = \frac{1}{\cos^2 rx}$ 9
 $\rightarrow \tan^2 x = 1 \rightarrow (\tan x) = \pm 1$ ✓


 $f(-\pi, 0) = f(-1, \omega)$ ← سوال 10
 $\frac{0}{r} = -\frac{1}{r} \rightarrow -\frac{1}{r}x + b = 0 \rightarrow b = -\frac{1}{r}$ ✓
 $-1 \cdot \frac{1}{r} - \frac{1}{r} = \frac{1}{r}$

$y = -\sin^2 x + r \rightarrow \frac{r\pi}{r} = \pi = T$ ✓
 ← سوال 9

$y = r \cos(x + \frac{1}{r})\pi + 1 \rightarrow \frac{r\pi}{\pi} = r = T$ ✓


$f(x) = a + b \sin(cx) \cos(cx) \cos(rx)$ ← سوال 11
 $\frac{b}{r} \sin(rx) \rightarrow \frac{b}{r} \sin(rx) + a$ ✓
 $\frac{r\pi}{r} - \frac{r\pi}{10} = \frac{r\pi}{10} = \frac{r\pi}{\omega} = \frac{r\pi}{rc} \rightarrow c = \frac{\omega}{r}$

$\max = \frac{r}{r} + a = r$
 $\min = -\frac{r}{r} + a = 0 \rightarrow a = r$ ✓
 $\frac{\omega}{r} \times 1 = \omega$ ✓
 $\frac{b}{r} = r \rightarrow b = r$ ✓
 $\frac{b}{r} = 1 \rightarrow b = 1$ ✓