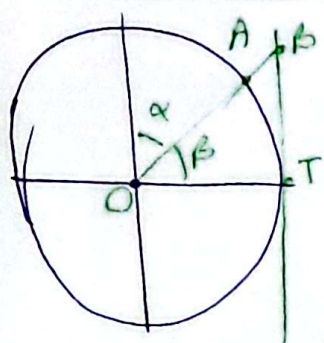
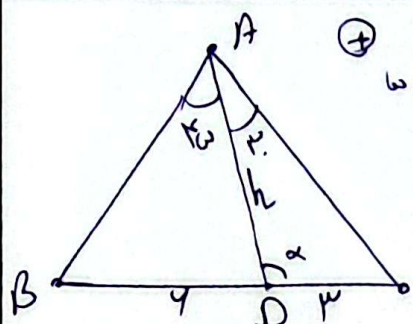




$$\left. \begin{aligned} BT &= \tan \beta = \cot \alpha \\ OT &= 1 \end{aligned} \right\} OB = \sqrt{1 + \cot^2 \alpha} = \frac{1}{\sin \alpha}$$

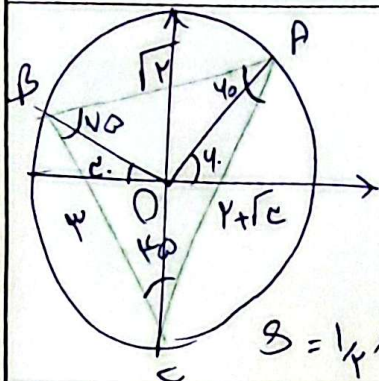
$$AB = OB - 1 = \frac{1}{\sin \alpha} - 1 \leftarrow \text{جواب}$$



تاندن کنیس ما $\rightarrow \frac{h}{\sin \beta} = \frac{4}{\frac{1}{\sqrt{2}}} \Rightarrow \frac{h}{\sin \beta} = \frac{4\sqrt{2}}{1} = 4\sqrt{2}$

تیم $\Rightarrow \frac{h}{\sin \beta} = \frac{4\sqrt{2}}{1} = 4\sqrt{2}$

جواب $\frac{AB}{\sin \beta} = \frac{AC}{\sin \alpha} \rightarrow \frac{AB}{\sin \beta} = \frac{4\sqrt{2}}{\sin \alpha} = 4\sqrt{2}$



ب) محیط با استفاده از تاندن کنیس ما طول هر ضلع برابر می آید

$AB = \sqrt{2}, AC = \sqrt{3+2}, BC = \sqrt{3} \Rightarrow \sqrt{2+1} + \sqrt{2+3}$

جواب

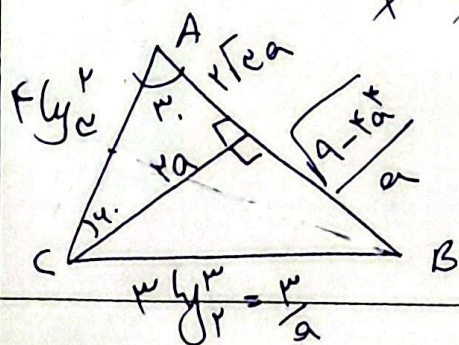
این را برای محاسبه مساحت به کار می آوریم

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

جواب

$S = \frac{1}{2} \sin \alpha \cdot ab = \frac{1}{2} \times \frac{1}{\sqrt{2}} \times \frac{1}{\sqrt{2}} \times \sqrt{4 - 4a^2 + 2\sqrt{3}a^2}$

$\sin \alpha = a$



$S = \sqrt{4 - 4(\frac{1}{\sqrt{2}})^2 + 2\sqrt{3}(\frac{1}{\sqrt{2}})^2} \leftarrow \text{جواب}$

برای دست آوردن بابتی مانند جای alpha $\cos \alpha$ متری رسم

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

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

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

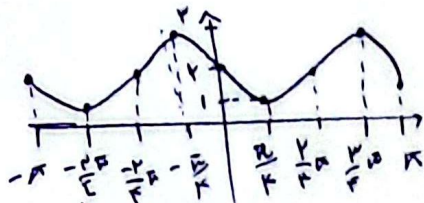
$\alpha = 0 \rightarrow \sin \alpha = 0$

$\alpha = \frac{\pi}{2}$

جواب

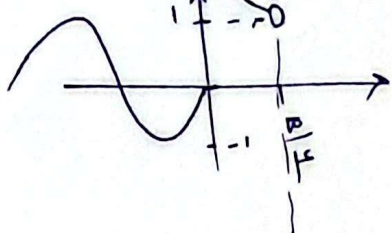
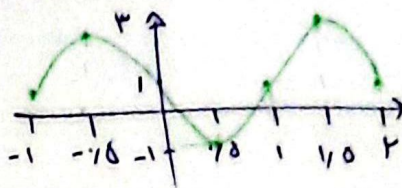
$$\text{الف) } y = -2 \sin 2x + 2 = -2 \sin 2x + 2$$

$$T = \frac{2\pi}{2} = \pi$$



$$\text{ب) } y = 2 \sin(\pi x + \frac{\pi}{4}) + 1 = -2 \sin \pi x + 1$$

$$T = \frac{2\pi}{\pi} = 2$$



$$R = [-1, +\infty)$$

$$f(x) = \begin{cases} \cot x & x \in (\frac{\pi}{2}, \pi) \\ \sin x & x \in (-1, \frac{\pi}{2}) \end{cases}$$

$$f(x) = a + b \sin(x) \cos(x) \cos(2x) = a + \frac{b}{2} \sin(2x) \cos(2x)$$

$$\frac{1}{2} \sin(2x) \cos(2x) \rightarrow \frac{1}{4} \sin(4x) \quad 2 + 2 \sin 2x$$

$$T = \frac{2\pi}{10} = \frac{2\pi}{5} \Rightarrow C = +\frac{2\pi}{5}$$

$$a = +2$$

$$\frac{bc}{a} = \frac{1 \times \frac{2\pi}{5}}{2} = \frac{\pi}{5}$$

$$2 = \frac{b}{2} \Rightarrow b = +4$$

$$b = +4$$

این دانه مقدار را باید در جواب می نویسیم

جواب

$$a \cos bx + c \Rightarrow -3 \cos 2x - 1 \Rightarrow -3 \cos 2x - 1 = 0$$

$$T = \pi = \frac{2\pi}{|b|} \rightarrow b = +2$$

$$a = -3$$

$$c = -1$$

$$\Rightarrow \cos 2x = \frac{1}{2} \rightarrow \frac{3}{4} \rightarrow \tan \alpha = \frac{3}{4}$$

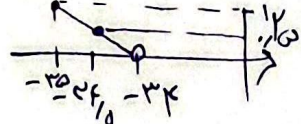
$$| \tan \alpha | = \frac{3}{4}$$

جواب

$$f(-3, 5) = f(-1 - 3\pi - \frac{1}{5}) \rightarrow$$

یعنی تابع f قبل از قرار گرفتن در

یازده بار تکرار شده، بعد از آن نیم واحد عقب تر رفته است.



$$\Rightarrow f(-2, 5) = \frac{1}{2}$$

جواب

محمد حسن عابدی