

دوم دستری

تکلیف سری

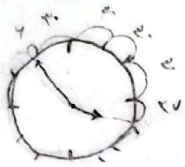
تاریخ زهره شفیق

۲۰

۳:۵۴

سوال ۱

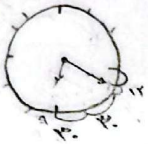
الف)



$$r \times \alpha = 27 \times 2 = 54 \text{ cm}$$

$$\alpha = | \Delta \Delta m - r \cdot h | = | \Delta \Delta m - 9 | = 50^\circ \Rightarrow 34 - 20 = 14^\circ$$

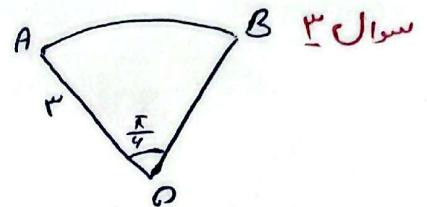
الف)



$$r \cdot \alpha = 3 \cdot 3 = 9 \text{ cm}$$

سوال ۲ ۴:۱۸

$$\alpha = | \Delta \Delta m - r \cdot h | = | \Delta \Delta m - 3 \cdot 4 | = 11^\circ$$



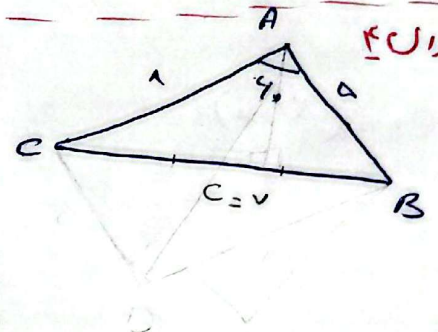
سوال ۳

$$\text{الف) } S = \frac{\alpha}{2} R^2 \Rightarrow \frac{\pi}{2} r^2 \alpha = \frac{\pi}{2} R^2$$

$$\text{ب) } P = \alpha R + 2R = \frac{\pi}{4} r^2 + 4 = \frac{\pi}{4} + 4 \Rightarrow \frac{\pi + 12}{4} \text{ cm}$$

$$\text{الف) } S_{ABC} = \frac{1}{2} AC \cdot AB \cdot \sin \alpha \Rightarrow \frac{1}{2} \times 4 \times 4 \times \frac{\sqrt{3}}{2} = 4\sqrt{3}$$

$$\text{ب) } C^2 = a^2 + b^2 - 2ab \cos \alpha \Rightarrow C = \sqrt{a^2 + b^2 - 2ab \cos \alpha} \Rightarrow P = a + b + C = 1 + 4 + \sqrt{17}$$



سوال ۴

$$\frac{a}{\sin A} = \frac{b}{\sin B} = \frac{c}{\sin C}$$

$$\frac{1}{\frac{1}{r}} = \frac{15\sqrt{2}}{\sin B} = \frac{c}{\sin C} \Rightarrow r = \frac{15\sqrt{2}}{\sin B}$$

$$\Rightarrow \sin B = \frac{r}{15\sqrt{2}} \Rightarrow B = 45^\circ$$

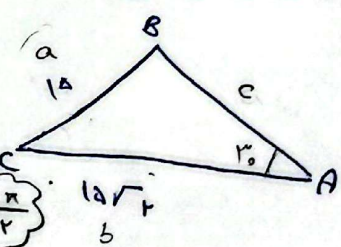
$$\Rightarrow \sin C = \frac{r}{15\sqrt{2}} \Rightarrow C = 15^\circ$$

$$\Rightarrow \sin A = \frac{r}{15\sqrt{2}} \Rightarrow A = 15^\circ$$

$$\Rightarrow \sin B = \frac{r}{15\sqrt{2}} \Rightarrow B = 45^\circ$$

$$\Rightarrow \sin C = \frac{r}{15\sqrt{2}} \Rightarrow C = 15^\circ$$

$$B + C = 15^\circ \Rightarrow 45^\circ + C = 15^\circ \Rightarrow C = 15^\circ \Rightarrow \frac{15\sqrt{2} \times \pi}{180} = \frac{\pi}{8}$$



سوال ۵

$$\frac{\tan(\pi - \alpha) + r \tan(\pi + \alpha)}{\tan(\pi - \alpha) - \tan(\pi + \alpha)} = \frac{-\tan(\alpha) + r \tan(\alpha)}{-\tan(\alpha) - \tan(\alpha)} = \frac{r \tan(\alpha)}{-2 \tan(\alpha)} = -\frac{r}{2}$$

سوال ۶

$$\tan \frac{\pi}{4} = \alpha \Rightarrow A = \frac{r \tan \frac{\pi}{4} + \tan \frac{\pi}{4}}{r \tan \frac{\pi}{4} - \tan \frac{\pi}{4}} = \frac{r \tan \left(\frac{\pi}{4} - \alpha \right) + \tan \left(\frac{\pi}{4} + \alpha \right)}{r \tan \left(\frac{\pi}{4} - \alpha \right) - \tan \left(\frac{\pi}{4} + \alpha \right)} = \frac{r \cot \alpha - \cot \alpha}{r \tan \alpha - \cot \alpha} = -\frac{\cot \alpha}{r \tan \alpha + \cot \alpha}$$

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

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

سوال ١

$$\frac{\sin x + \cos x}{\cos x} + \frac{\sin x - \cos x}{\cos x} = r \Rightarrow \frac{\tan x + 1}{\tan x - 1} + \frac{\tan x - 1}{\tan x + 1} = r$$

$$\Rightarrow \frac{(\tan x + 1)^2 + (\tan x - 1)^2}{\tan^2 x - 1} = r \Rightarrow \tan^2 x + 1 + \tan^2 x + 1 - r \tan x = r \tan^2 x - r$$

$$\Rightarrow r \tan^2 x + r = r \tan^2 x - r \Rightarrow \tan^2 x = 0$$

$$\frac{\sin^2 x - r \cos^2 x - \frac{1}{\cos^2 x}}{\cos^2 x} = r \Rightarrow \frac{\tan^2 x - r + 1 + \tan^2 x}{\tan^2 x + \frac{r-1}{1} - \tan^2 x} = r \Rightarrow r \tan^2 x - 1 = r \Rightarrow r \tan^2 x = 0 \Rightarrow \tan^2 x = 0$$

سوال ٩

$$\cos(2\sqrt{r}) \Rightarrow \cos^2(\sqrt{r}) = \frac{1 + \cos 2\sqrt{r}}{2}$$

$$\Rightarrow \cos^2(\sqrt{r}) = \frac{1 + \frac{\sqrt{r}}{r}}{2} \Rightarrow \frac{r + \sqrt{r}}{2} = \frac{r + \sqrt{r}}{2} = \cos^2(\sqrt{r})$$

$$\Rightarrow \frac{\sqrt{r + \sqrt{r}}}{r} = \cos(\sqrt{r})$$

$$\sin(4\sqrt{r}) \Rightarrow \sin^2(4\sqrt{r}) = \frac{1 - \cos 4\sqrt{r}}{2}$$

$$\Rightarrow \frac{1 + \frac{\sqrt{r}}{r}}{2} \Rightarrow \frac{r + \sqrt{r}}{2} = \frac{r + \sqrt{r}}{2} = \sin^2(4\sqrt{r})$$

$$\Rightarrow \sin(4\sqrt{r}) = \frac{\sqrt{r + \sqrt{r}}}{r}$$

سوال ١٠