

تالیف ۱۲ صفر ۱۴۰۱

بسم الله الرحمن الرحيم

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۱۹، ۷۵

سوال ۱

$$\text{الف) } 2V = (20) \text{ Rad} \rightarrow \frac{2V}{1\Lambda_0} = \frac{\text{Rad}}{\Lambda} \rightarrow \text{Rad} = \frac{2V\Lambda}{1\Lambda_0} = \frac{2\Lambda}{4_0} \text{ Rad} \quad \checkmark$$

$$\text{ب) } 120^\circ = (20) \text{ Rad} \rightarrow \frac{120}{1\Lambda_0} = \frac{\text{Rad}}{\Lambda} \rightarrow \text{Rad} = \frac{120\Lambda}{1\Lambda_0} = \frac{2\Delta\Lambda}{44} \text{ Rad} \quad \checkmark$$

$$\text{ج) } \frac{\Delta\Lambda}{14} \text{ Rad} = (20^\circ) \rightarrow \frac{\frac{\Delta\Lambda}{14}}{\Lambda} = \frac{20^\circ}{1\Lambda_0} \rightarrow \frac{\Delta}{14} = \frac{20^\circ}{1\Lambda_0} \rightarrow 20^\circ = 7\Delta^\circ \quad \checkmark$$

$$\text{د) } \frac{4\Lambda}{9} \text{ Rad} = (20^\circ) \rightarrow \frac{\frac{4\Lambda}{9}}{\Lambda} = \frac{20^\circ}{1\Lambda_0} \rightarrow \frac{4}{9} = \frac{20^\circ}{1\Lambda_0} \rightarrow (20^\circ, 1\Lambda_0) \quad \checkmark$$

$$\frac{\frac{\Delta\Lambda}{\Lambda}}{\Lambda} = \frac{20^\circ}{1\Lambda_0} \rightarrow \frac{20^\circ}{1\Lambda_0} \cdot \frac{a}{\Lambda} \rightarrow 20^\circ = \frac{110a}{\Lambda} = \frac{40a}{2} \quad \checkmark \quad \text{سوال ۲}$$

$$\frac{120a}{a} = \frac{D}{1\Lambda_0} \rightarrow \frac{D}{1\Lambda_0} = \frac{120a}{\frac{\Lambda}{\Lambda} \times 9} \rightarrow D = \frac{\frac{120}{\Lambda} \times \Delta a}{\frac{\Lambda}{\Lambda}} = \frac{20a}{2} \quad \checkmark \quad \text{سوال ۳}$$

$$\rightarrow 22\Delta a + 14\Delta a + 1.a = 40a = 1\Lambda_0 \rightarrow a = 5^\circ \quad \checkmark$$

سوال ۳

$$\text{الف) } \underbrace{\cos 4^\circ \cos 4^\circ}_{\frac{1}{2} \times \frac{\sqrt{3}}{2} = \frac{\sqrt{3}}{4}} - \underbrace{\sin 4^\circ \sin 10^\circ}_{\frac{1}{2} \times \frac{\sqrt{2}}{2} = \frac{\sqrt{2}}{4}} - \frac{\tan 40^\circ}{1} + \frac{\cot 40^\circ}{2} = 1 \quad \checkmark$$

(۲)

Subject.

$$\frac{\frac{1}{\sqrt{r}}}{\tan^2 \alpha_0} + \frac{1}{\tan^2 \alpha_0} + \frac{r}{\tan^2 \alpha_0} = \frac{r \frac{1}{r}}{\sqrt{r} - \frac{\sqrt{r}}{r}} = \frac{\frac{1}{r}}{\frac{r\sqrt{r} - \sqrt{r}}{r}}$$

$$= \frac{1}{r\sqrt{r} - \sqrt{r}} = \frac{1}{r\sqrt{r}} \quad \checkmark$$

$$\frac{-\sin \alpha_0 \cos \alpha_0}{-(\frac{1}{r})^2} + \frac{\cos \alpha_0 \sin \alpha_0}{(\frac{\sqrt{r}}{r})^2} = \sin \theta$$

سؤال ٢ ←

(1.75)

$$\rightarrow \sin \theta = \frac{r}{r} - \frac{1}{r} = \frac{1}{r} \quad \text{و } \sin \theta + \cos \theta = 1 \rightarrow \cos \theta = 1 - \sin \theta$$

$$\rightarrow \cos \theta = \frac{1}{r} \rightarrow \tan = \frac{\pm \frac{\sqrt{r}}{r}}{\pm \frac{1}{r}} = \pm 1 \quad \frac{1}{\cos} = 1 + \tan^2$$

$$\rightarrow \frac{1}{r} = 1 + \tan^2 \rightarrow \tan^2 = 1 - \frac{1}{r} \rightarrow \tan = 1 \quad \text{و } \tan = 1 \quad \times$$

سؤال ثغمة θ حاده است!

$$\frac{\frac{r\sqrt{r}}{r} \left(1 - \tan^2 \alpha_0 \right)}{\left(\frac{1 - \cot^2 \alpha_0}{r} \right)^2} = \tan \theta$$

سؤال ٥ ←

(٢)

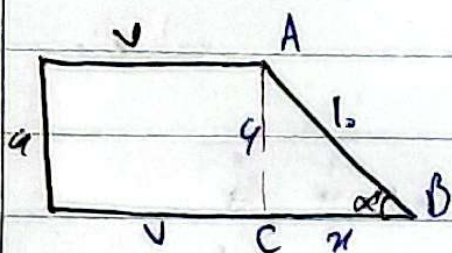
$$\rightarrow \frac{\frac{r\sqrt{r}}{r}}{\frac{r\sqrt{r}}{r}} = \sqrt{r} \tan \theta \rightarrow \theta = \alpha_0 \text{ و } \alpha_0 \rightarrow \alpha_0 = \frac{\pi}{r} \quad \checkmark$$

$$\alpha_0 = \frac{\pi}{r}$$

Subject.

$$\frac{r \sin \theta - \cos \theta}{\sin \theta - r \cos \theta}, \tan \theta = 0 \rightarrow \sin \theta = 0, \cos \theta = 1 \leftarrow \text{سؤال ٢}$$

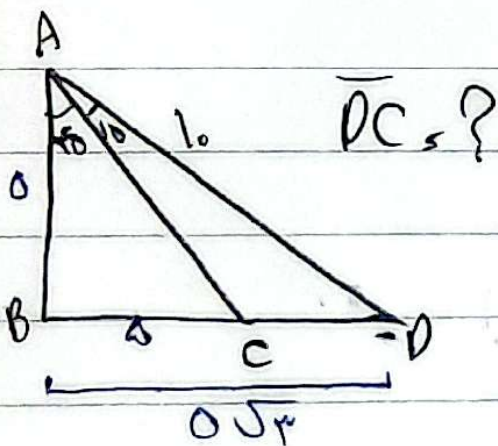
$$\rightarrow \frac{r(0) - 1}{0 - (1)} = \frac{1 \cdot 1}{1} = 1 \checkmark$$



$$\rightarrow \sin \alpha = \frac{4}{10} = \frac{AC}{AB} \rightarrow AB = 10$$

$$x^2 + 4^2 = 10^2 \rightarrow x^2 + 16 = 100 \rightarrow x^2 = 84 \rightarrow x = \sqrt{84}$$

$$\rightarrow L = 4 + v + v + 10 + 1 = 31 \checkmark$$



$$\sin(10^\circ) = \frac{\sqrt{3}}{4} = \frac{BD}{10} \rightarrow BD = 0.5\sqrt{3}$$

$$\cos(10^\circ) = \frac{1}{4} = \frac{AB}{10} \rightarrow AB = 0$$

$$\tan 10^\circ = \frac{1}{4} = \frac{BC}{AB} \rightarrow BC = 0$$

$$\rightarrow DC = 0.5\sqrt{3} - 0 = 0.5(\sqrt{3} - 1) \checkmark$$

سوال ۹

$$\text{الف) } \sin \downarrow \cos \uparrow \rightarrow \text{ربع سوم} \checkmark$$

(۲)

$$\text{ب) } \sin \downarrow \cos \uparrow \rightarrow \text{ربع دوم} \checkmark$$

$$1 + \cot^2 \theta = \frac{1}{\sin^2 \theta} \rightarrow 1 + (M)^2 = \frac{1}{\sin^2 \theta}$$

سوال ۱۰

$$\rightarrow 10 = \frac{1}{\sin^2 \theta} \rightarrow \sin^2 \theta = \frac{1}{10} \rightarrow \sin \theta = \pm \sqrt{\frac{1}{10}} \quad (۲)$$

$$\text{درناحیه سوم} \rightarrow -\sqrt{\frac{1}{10}} \checkmark$$