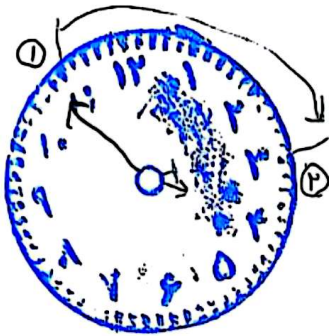


14,5

سید محمد A دسر
جمعه ۱۶:۳۰ تا ۱۸:۳۰

برق و پرورش تکلیف ۱۹

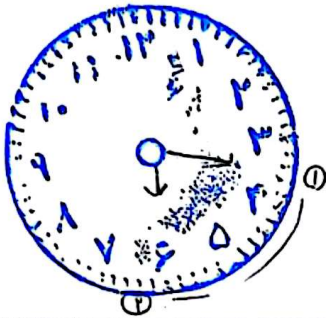


$$\begin{aligned} 1 \times 30 &= 120 \\ 1 &\rightarrow 6^\circ \\ 2 &\rightarrow \frac{60}{2} = 30 \\ \Rightarrow 120 + 6 + 30 &= 156 \end{aligned}$$

الف

$$\begin{aligned} \alpha &= |\omega / \Delta M - \omega H| = 5 / 5 \times 56 - 3 \times 3 = 20.5 \\ \Rightarrow 360 - 20.5 &= 153 \end{aligned}$$

ب



$$\begin{aligned} 1 &\rightarrow 2 \times 6 = 12^\circ \\ 2 \times 30 &= 60 \\ 2 &\rightarrow \frac{1}{2} = 1 \\ \Rightarrow 12 + 6 + 9 &= 27 \end{aligned}$$

الف

$$\alpha = 5 / 5 \times 18 - 180 = 18$$

ب

$$S = \frac{\alpha}{r} r^2 = \frac{\pi}{12} \times 9 = 3 \frac{\pi}{4}$$

$$P = \alpha r + r^2 = \frac{\pi}{2} \times 3 + 6 = \frac{\pi}{2} + 6$$

الف

ب

$$S = \frac{1}{2} AB \sin \alpha = \frac{1}{2} \times 4 \times \frac{\sqrt{2}}{2} = 10\sqrt{2}$$

$$C = \sqrt{a^2 + b^2 - 2ab \cos \alpha} = \sqrt{25 + 64 - \frac{10}{2}} = 7$$

$$P = 7 + 8 + 5 = 20$$

الف

ب

$$\frac{10}{\sin 30^\circ} = \frac{10\sqrt{2}}{\sin B} = \frac{AB}{\sin 45^\circ}$$

$$10 \times \sin B = \frac{10}{2} \sqrt{2} \Rightarrow B = 45^\circ$$

$$30 = 150 - 45 = 105^\circ$$

$$\frac{D}{180} = \frac{R \Delta \theta}{\pi} \Rightarrow B = \frac{\pi}{4} \text{ Rad} \quad C = \frac{\sqrt{2}\pi}{12} \text{ Rad}$$

الف

ب

$$\frac{\tan(\pi - \alpha) + r \tan(\pi + \alpha)}{\tan(r\pi - \alpha) - \tan(r\pi + \alpha)} = \frac{-\tan \alpha + r \tan \alpha}{-\tan \alpha - \tan \alpha} = \frac{r \tan \alpha}{-r \tan \alpha} = -1$$

$$\tan \omega = a \quad \cot \omega = \frac{1}{a}$$

$$\frac{r \tan \omega + \tan \frac{\pi}{r}}{r \tan \omega - \tan \frac{\pi}{r}} = \frac{\tan \omega}{\tan \frac{\pi}{r}} = \frac{\tan \frac{\pi}{r}}{r \tan \frac{\pi}{r}} = \frac{1}{r} = \frac{1}{r a}$$

$$\frac{r \tan(\frac{\pi}{r} - \omega) + \tan(\frac{\pi}{r} + \omega)}{r \tan(\frac{\pi}{r} - \omega) - \tan(\frac{\pi}{r} + \omega)} = \frac{r \cot \omega - \cot \omega}{-r \tan \omega - \cot \omega}$$

$$\frac{\frac{1}{r a} - \frac{1}{a}}{-r a - \frac{1}{a}} = \frac{-1}{r a^2 + 1}$$

$$\frac{\sin \alpha + \cos \alpha}{\sin \alpha - \cos \alpha} + \frac{\sin \alpha - \cos \alpha}{\sin \alpha + \cos \alpha} = r \xrightarrow{\div \cos} \frac{\tan \alpha + 1}{\tan \alpha - 1} + \frac{\tan \alpha - 1}{\tan \alpha + 1} = r$$

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

$$\frac{\tan^2 \alpha + 1}{\tan^2 \alpha - 1} = \frac{r}{1} \quad r \tan^2 \alpha + r = r \tan^2 \alpha + r \Rightarrow \tan^2 \alpha = \omega$$

وقت بقیه بر کسینوس با این روش هم می توانیم حساب کنیم

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

$$\tan^2 \alpha - 1 = r \tan^2 \alpha + r \quad r \tan^2 \alpha = -1 \quad \tan^2 \alpha = -\frac{1}{r}$$

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

$$r \sin^2 \alpha + 1 \cos^2 \alpha - \omega = 0 \Rightarrow \omega \cos^2 \alpha = r \quad \cos^2 \alpha = \frac{r}{\omega}$$

$$r \sin^2 \alpha + r \cos^2 \alpha + \omega \cos^2 \alpha - \omega = 0$$

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

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