

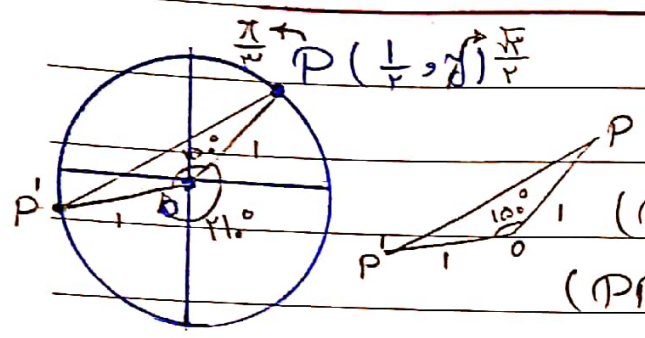
۲۰

«مسئله‌های آشنایی»

۱.
$$\frac{a \sin \frac{\pi x}{r} + b \cos \frac{\pi x}{r}}{a \sin \frac{11\pi x}{r} + b \cos \frac{\pi x}{r}} = \frac{\tan \frac{\omega x}{r}}{1}$$

$$\frac{1 + \frac{\sqrt{3}}{r}(a+b)}{1 - \frac{\sqrt{3}}{r}(b-a)} = \frac{(a+b)}{(b-a)} = \frac{1}{r} \Rightarrow ra + rb = b - a$$

$$ra = -rb \Rightarrow \frac{b}{a} = \frac{r}{-r} = -1$$



۲. زاویه بین خط مماس و وتر

بین خط مماس و وتر

$$(PP')^2 = 1 + 1 - 2(1)(1)\cos(150^\circ)$$

$$(PP')^2 = 2 - 2(-\frac{\sqrt{3}}{2}) = 2 + \sqrt{3}$$

$$PP' = \sqrt{2 + \sqrt{3}}$$

$$P'PO \text{ مساحت: } 1 + 1 + \sqrt{2 + \sqrt{3}} = 2 + \sqrt{2 + \sqrt{3}}$$

۳.
$$\frac{\pi}{9} = \frac{D}{180} \Rightarrow \frac{1}{9} = \frac{D}{180} \Rightarrow D = 20^\circ$$

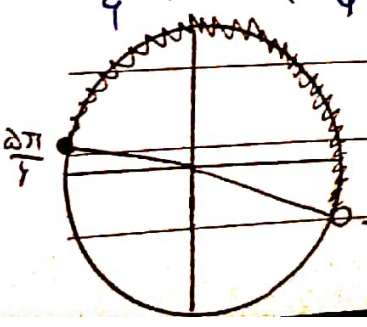
ساعت $\Rightarrow \lambda = r_{\min} \Rightarrow 2:40$ خواهد بود

۴.
$$\lambda = |\omega/\omega_M - 90| \Rightarrow r_0 = |\omega/\omega_M - 90|$$

$$\omega/\omega_M - 90 = r_0 \rightarrow \omega/\omega_M = 110 \Rightarrow M = r_{\min}$$

$$\omega/\omega_M - 90 = -r_0 \rightarrow \omega/\omega_M = 70 \Rightarrow M = 12.72 \min$$

۵.
$$-\frac{\pi}{4} < \alpha < \frac{\pi}{4} \rightarrow \sin \alpha = \frac{M-r}{\omega}$$



$$\frac{-1}{r} < \sin \alpha < \frac{1}{r}$$

$$\frac{-1}{r} < \frac{M-r}{\omega} < \frac{1}{r}$$

$$\omega < M - r < \omega$$

$$\cos 10^\circ$$

$$-\sin 10^\circ$$

$$\sin(10^\circ + 10^\circ)$$

$$\cos(10^\circ - 10^\circ)$$

$$\sin(10^\circ) + k \cos(10^\circ)$$

$$= \mu$$

$$\tan 10^\circ = 0.176$$

$$\cos(10^\circ) + r \sin(10^\circ)$$

$$k = ?$$

$$\cos(10^\circ - 10^\circ)$$

$$\sin(10^\circ + 10^\circ)$$

$$-\cos 10^\circ$$

$$-\sin 10^\circ$$

$$\Rightarrow \frac{\cos 10^\circ - k \sin 10^\circ}{-\cos 10^\circ - r \sin 10^\circ} = \mu \div \cos 10^\circ$$

(r)

$$1 - k \tan 10^\circ$$

$$= \mu \Rightarrow +1 - 0.176k = \mu$$

$$-1 - r \tan 10^\circ$$

$$-1 - r(-0.176)$$

$$-1/2$$

$$+1 - 0.176k = -1/2$$

$$0.176k = 1.5 \Rightarrow k = 8.5$$

✓

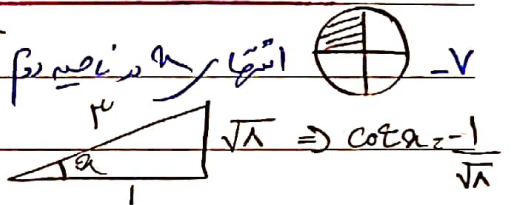
$$1 - \cos 2\alpha$$

$$1 - \cos 2\alpha = r + r \cos 2\alpha$$

$$1 + \cos 2\alpha$$

$$-1 = r \cos 2\alpha$$

$$\cos 2\alpha = -1/r$$



$$+ \cot 2\alpha$$

$$- \cot 2\alpha$$

$$\tan\left(\frac{\pi}{r} - \alpha\right) - \cot(\pi - \alpha)$$

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

$$+ \tan \alpha$$

$$- \tan \alpha$$

$$\frac{\cot \alpha + \cot \alpha}{\tan \alpha - r \tan \alpha} \Rightarrow$$

(r)

$$r \cot 2\alpha$$

$$\frac{r \cos 2\alpha}{\sin 2\alpha}$$

$$- \tan \alpha$$

$$- \frac{\sin \alpha}{\cos \alpha}$$

$$= -r \cos 2\alpha$$

$$\sin 2\alpha$$

$$= -r \cot 2\alpha = -r \left(\frac{-1}{\sqrt{1/r}}\right) =$$

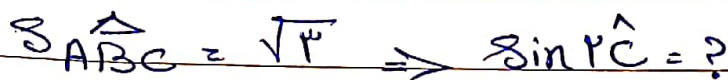
$$-r \left(\frac{1}{\sqrt{r}}\right) = \frac{r}{\sqrt{r}}$$

④

$$l_A = l_B \quad (l = \alpha R)$$

$$\frac{q_A}{V_0} \times r_A = \frac{q_B}{V_0} \times r_B \Rightarrow \frac{r_A}{r_B} = \frac{q}{q} = \frac{r}{r}$$



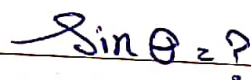


$$\cos 30^\circ = \frac{\sqrt{r}}{r} = \frac{AB}{r} \Rightarrow AB = \sqrt{r}$$

Q

$$AC = \sqrt{7} \Rightarrow \text{میانگرت در } ABC$$

~~21~~



⑤

$MC = NC = 1 \Rightarrow \hat{M} = \hat{N} = 50^\circ$

$$\underline{MN \approx \sqrt{r}}$$

قصہ کیسے ہو
سہا :

$$\cos \theta = \frac{14}{14} \Rightarrow \cos \theta = \frac{14}{14}$$

