

فصل اول - ریاضیات پیشرفته ۱۲

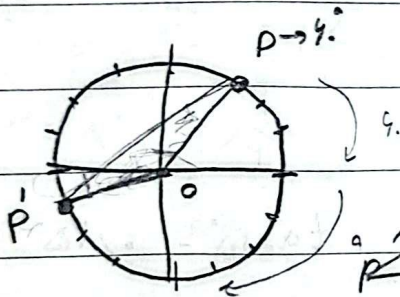
$$\frac{b}{a} = \frac{-\frac{1}{\sqrt{3}}a}{a} = -\frac{1}{\sqrt{3}} = \frac{a \sin \frac{\pi}{6} + b \cos \frac{\pi}{6}}{a \sin \frac{11\pi}{6} + b \cos \frac{\pi}{6}} = \tan \frac{5\pi}{6} \quad -1$$

$$\frac{\overbrace{a \sin \frac{\pi}{6}}^{-\frac{\sqrt{3}}{2}a} + \overbrace{b \cos \frac{\pi}{6}}^{-\frac{\sqrt{3}}{2}b}}{\underbrace{a \sin \frac{11\pi}{6}}_{-\frac{1}{2}a} + \underbrace{b \cos \frac{\pi}{6}}_{b + \frac{1}{2}b}} = \tan \frac{5\pi}{6} = -\frac{\sqrt{3}}{3}$$

$$\frac{-\frac{\sqrt{3}}{2}(a+b)}{-\frac{1}{2}(a-b)} = -\frac{\sqrt{3}}{3} \rightarrow -3a - 3b = a - b$$

$$-b = 4a \leftarrow -2b = 4a$$

$$b = -2a$$



$$P\left(\frac{1}{2}, \frac{\sqrt{3}}{2}\right) \quad -2$$

$$y = \frac{\sqrt{3}}{2}$$

$$n^2 = 1 + 1 - 2(1)(1) \cos(60^\circ)$$

$$n = \sqrt{2 + \sqrt{3}} \leftarrow 2^2 = 2 - 2\left(-\frac{\sqrt{3}}{2}\right) = 2 + \sqrt{3}$$

$$b = 1 + 1 + \sqrt{2 + \sqrt{3}} = 2 + \sqrt{2 + \sqrt{3}}$$

۳ - ساعت ۲ عقربه ساعت شمار $\frac{\pi}{9}$ بگذرد

$$\frac{\pi}{9} = \frac{D}{1n} \rightarrow D = 2^\circ \rightarrow \text{عقربه ساعت شمار به اندازه ۲ درجه می‌چرخد}$$

ساعت ۲:۴ است

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$$\alpha = \left| \frac{11}{r} M - 3 \cdot H \right|$$

ک - س از دست. دقیقه

$$r_c = \left| \frac{11M}{r} - 3 \cdot x \cdot 3 \right| \rightarrow r_c = \left| \frac{11M}{r} - 9 \right|$$

$$\frac{11M}{r} - 9 = -r_c$$

$$\frac{11M}{r} - 9 = r_c$$

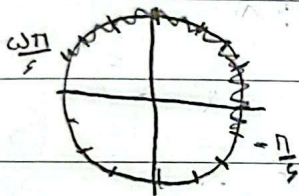
$$\frac{11M}{r} = 9$$

$$\frac{11M}{r} = 11 \rightarrow M = r_c$$

$$M = \frac{11 \cdot 1}{11} \quad (1)$$

$$\sin x = \frac{m-3}{a}$$

$$-\frac{\pi}{2} < x < \frac{\pi}{2} \quad - \omega$$



$$-\frac{1}{r} < \sin x \leq 1$$

$$-\frac{1}{r} < \frac{m-3}{a} \leq 1$$

Case (1)

$$-\frac{a}{r} < m-3 \leq a$$

$$m = 1, 2, 3, 4, 5, 6, 7$$

$$\frac{1}{r} < m \leq 1$$

$$\tan \alpha = \dots$$

$$\frac{\sin(10^\circ) + k \cos(10^\circ)}{\cos(10^\circ) + r \sin(10^\circ)} = \mu$$

$$\frac{\sin\left(\frac{\pi}{r} + 10\right) + k \cos\left(\frac{\pi}{r} - 10\right)}{\cos(\pi - 10) + r \sin(\pi + 10)} = \mu$$

$$\frac{\cos(10) - k \sin(10)}{-\cos(10) - r \sin(10)} = \mu$$

$$-\cos(10) - r \sin(10)$$

$$k = r \mu$$

$$1 - r \mu k = - \dots$$

$$\frac{1 - k \tan 10^\circ}{-1 - r \tan 10^\circ} = \mu$$

$$\rightarrow \frac{1 - r \mu k}{-1/a} = \mu$$

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

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

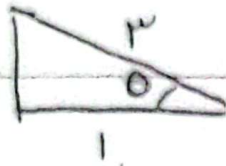
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$$\cot\left(\frac{\pi}{r} - x\right) + r \tan(\pi - x)$$

$r \cos x$

$$x' = 9 - 1 \quad \sqrt{\lambda} \cos x$$

$$x = \sqrt{\lambda}$$



$$1 - \cos x = r + r \cos x$$

$$\cos x = -\frac{1}{r} \leftarrow -1 = r \cos x$$

$$\frac{\cot x + \cot x}{\tan x - r \tan x} = \frac{-\frac{r}{\sqrt{\lambda}}}{-\sqrt{\lambda} + r \sqrt{\lambda}} = \frac{-\frac{r}{\sqrt{\lambda}}}{\sqrt{\lambda}} = -\frac{r}{\lambda} = -\frac{1}{\lambda}$$

$$\frac{1}{\sqrt{\lambda}} = \frac{\sqrt{\lambda}}{\lambda}$$

$$\frac{\frac{r_A}{L_A}}{\frac{r_B}{L_B}} \rightarrow Rad = \frac{r}{\omega} \pi$$

- 1

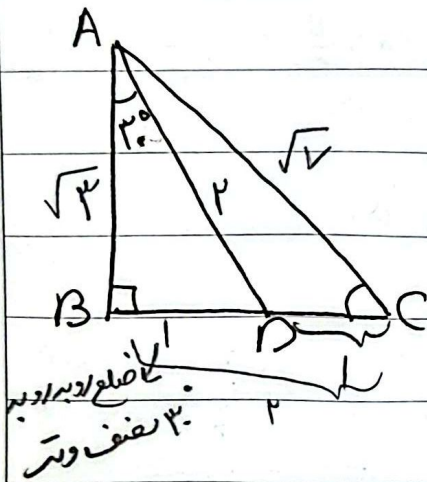
$$L_A = \frac{r_A}{\omega} \times v_A$$

$$\frac{S_A}{S_B} = \frac{r_A v_A}{r_B v_B} = \left(\frac{r_A}{r_B} \right)^2 = \frac{r_A}{r_B}$$

$$L_B = \frac{r_B}{\omega} \times v_B$$

$$L_A = L_B \rightarrow \frac{r_A}{\omega} \times v_A = \frac{r_B}{\omega} \times v_B$$

$$v_A = \frac{r_A}{r_B} v_B$$



$$AB^2 = AD^2 - BD^2$$

- 9

$$AB^2 = 3 - 1 = 2 \rightarrow AB = \sqrt{2}$$

$$S_{\triangle ABC} = \frac{\sqrt{3} \times AB \times BC}{2} = \frac{\sqrt{3}}{2}$$

$$BC = 2$$

$$AC^2 = AB^2 + BC^2 = 2 + 4 = 6 \rightarrow AC = \sqrt{6}$$

$$\sin C = \frac{\sqrt{3}}{\sqrt{6}}$$

$$\cos C = \frac{2}{\sqrt{6}}$$

$$\sin C = \frac{r}{R} \sin C \cos C$$

$$2 \times \frac{\sqrt{3}}{\sqrt{6}} \times \frac{2}{\sqrt{6}} =$$

$$\left(\frac{4\sqrt{3}}{6} \right)$$

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