

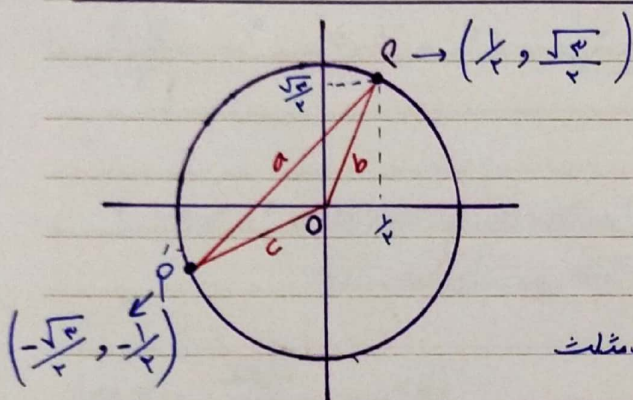
(۱)

$$\frac{a \sin \frac{5\pi}{6} + b \cos \frac{5\pi}{6}}{a \sin \frac{11\pi}{6} + b \cos \frac{11\pi}{6}} = \tan \frac{5\pi}{6}$$

$$\frac{b}{a} = ? \rightarrow (-2)$$

$$2a + 3b = b - a \rightarrow 2b = -3a \rightarrow b = -\frac{3}{2}a$$

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



$$a = \sqrt{b^2 + c^2 - 2bc \cos A}$$

$$\rightarrow a = \sqrt{1 + 1 - 2(\cos 150^\circ)} \rightarrow \sqrt{2 - 2(-\frac{\sqrt{3}}{2})} = \sqrt{2 + \sqrt{3}}$$

$$\rightarrow 2 + \sqrt{2 + \sqrt{3}}$$

(۲)

زاویه اولیه بین ساعت
شماره و دقیقه شمار

میزان حرکت عقربه ساعت شمار = نصف مقدار دقیقه

$$\frac{2\pi}{a}$$

(۳)

$$\frac{\pi}{3} - \frac{2\pi}{a} + \frac{\pi}{a} \rightarrow \frac{\pi}{3} - \frac{\pi}{a} \rightarrow \frac{2\pi}{a}$$

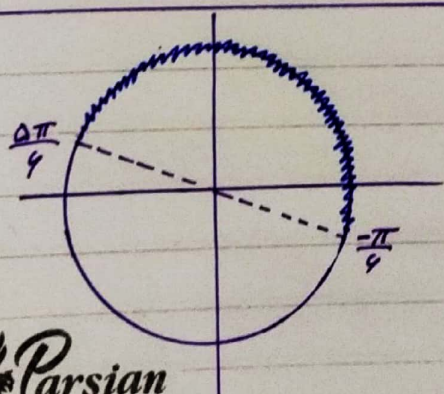
(۴)

$$\alpha = \left| \frac{11M}{2} - 90 \right| \rightarrow 20 = \left| \frac{11M}{2} - 90 \right|$$

$$\frac{11M}{2} = 110 \rightarrow M = 20$$

$$\frac{11M}{2} = 70 \rightarrow M = \frac{140}{11} \rightarrow 12 \dots$$

پس از گذشت ۲۰ دقیقه



$$-\frac{1}{2} < \cos \alpha \leq 1 \rightarrow -\frac{1}{2} < \frac{m-3}{5} \leq 1$$

(۵)

$$-\frac{1}{2} < m \leq 1 \rightarrow (1)$$

$$\frac{\sin(120^\circ) + K \cos(120^\circ)}{\cos(120^\circ) + \sqrt{3} \sin(120^\circ)} = \sqrt{3} \quad \tan 120^\circ = \frac{\sqrt{3}}{1} \rightarrow \sin = 1, \cos = \sqrt{3} \quad (4)$$

$$\frac{\sin(120^\circ + \frac{\pi}{3}) + K \cos(\frac{\pi}{3} - 120^\circ)}{\cos(\pi - 120^\circ) + \sqrt{3} \sin(\pi + 120^\circ)} \rightarrow \frac{\cos 120^\circ + K \sin 120^\circ}{-\cos 120^\circ + \sqrt{3} \sin 120^\circ} \rightarrow \frac{K - 1}{-1 - \sqrt{3}} = \sqrt{3}$$

$$\frac{K - 1}{-1 - \sqrt{3}} = \sqrt{3} \rightarrow K - 1 = -1 - \sqrt{3} \rightarrow K = -\sqrt{3}$$

$$1 - \cos x = \sqrt{3} + \sqrt{3} \cos x \rightarrow \sqrt{3} \cos x = -1 \rightarrow \cos x = -\frac{1}{\sqrt{3}}$$

$$\sin^2 x + \cos^2 x = 1 \rightarrow \sin^2 x = \frac{1}{3} \rightarrow \sin x = \frac{\sqrt{3}}{3}$$

$$\tan x = \frac{\frac{\sqrt{3}}{3}}{-\frac{1}{\sqrt{3}}} = -\sqrt{3}$$

$$\cot x = \frac{-\frac{1}{\sqrt{3}}}{\frac{\sqrt{3}}{3}} = -\frac{1}{\sqrt{3}} \rightarrow -\frac{\sqrt{3}}{3}$$

$$\frac{\tan(\frac{\pi}{3} - x) - \cot(\pi - x)}{\cot(\frac{\pi}{3} - x) + \sqrt{3} \tan(\pi - x)}$$

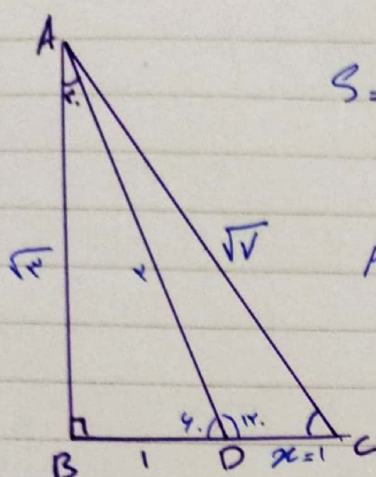
$$\frac{-\cot x - \cot x}{-\tan x + \sqrt{3} \tan x} \rightarrow \frac{\frac{\sqrt{3}}{3} + \frac{\sqrt{3}}{3}}{\sqrt{3} + \sqrt{3}(\sqrt{3})} = \frac{\frac{2\sqrt{3}}{3}}{3 - \sqrt{3}} \rightarrow \frac{\frac{\sqrt{3}}{3}}{-\sqrt{3}} = -\frac{1}{3}$$

$$\frac{1.1}{1.1} = \frac{R}{\pi} \rightarrow \frac{1.1\pi}{1.1} \rightarrow \frac{\pi}{1} \rightarrow \frac{4\pi}{1} \rightarrow \frac{4\pi}{1} \times R_A = \frac{4\pi}{1} \times R_B \quad (1)$$

$$\sqrt{3} R_A = \sqrt{3} R_B \rightarrow \frac{R_A}{R_B} = \left(\frac{R_A}{R_B}\right)^{\sqrt{3}}$$

$$R_A = \frac{1}{\sqrt{3}} R_B$$

$$\left(\frac{1}{\sqrt{3}}\right) = \left(\frac{\frac{1}{\sqrt{3}} R_B}{R_B}\right)^{\sqrt{3}}$$



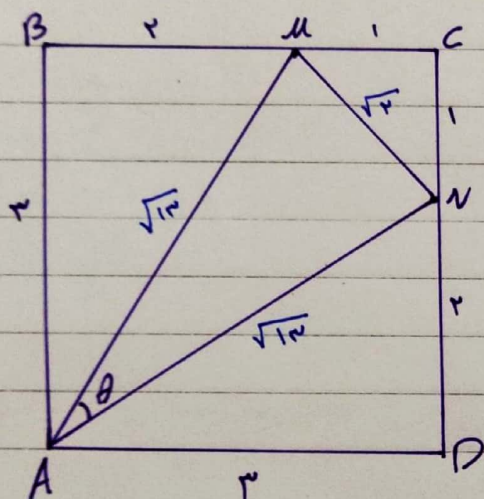
$$S = \frac{\sqrt{r} \times (1+x)}{r} = \sqrt{r} \rightarrow \boxed{x=1} \rightarrow \overline{DC}$$

$$AC = \sqrt{1 + r - r(\cos 120^\circ)} \rightarrow \sqrt{1 + r - r(-\frac{1}{2})} \rightarrow \sqrt{r}$$

$$\frac{a}{\sin A} = \frac{b}{\sin B} = \frac{c}{\sin C} \rightarrow \frac{\sqrt{r}}{1} = \frac{\sqrt{r}}{\sin C} \rightarrow \sqrt{\frac{r}{V}}$$

$$\sin^2 C = r \sin C \cos B \rightarrow r \times \frac{\sqrt{r}}{\sqrt{r}} \times \frac{r\sqrt{r}}{r} \rightarrow \boxed{\frac{r\sqrt{r}}{r}}$$

$$\cos C = \frac{r}{\sqrt{r}} \rightarrow \frac{r\sqrt{r}}{r}$$



$$\sin A = ?$$

$$AN = AM = \sqrt{1 + r} \rightarrow \sqrt{1r}$$

$$\cos A = \frac{1^2 + 1^2 - r}{2 \cdot 1 \cdot 1} \rightarrow \frac{r}{2} \rightarrow \frac{1r}{1r}$$

$$\cos^2 \theta + \sin^2 \theta = 1 \rightarrow \frac{1 + r}{1 + r} + x = 1$$

$$x = \frac{r}{1 + r} \rightarrow \boxed{\sin \theta = \frac{r}{1r}}$$