

$$\frac{-a \sin \frac{\pi}{3} - b \cos \frac{\pi}{6}}{-a \sin \frac{\pi}{6} + b \cos \frac{\pi}{3}} = \frac{-(a+b) \left(\frac{\sqrt{3}}{2}\right)}{(a-b) \left(\frac{1}{2}\right)} = \frac{-\sqrt{3}}{1} \Rightarrow \frac{a+b}{a-b} = \frac{1}{\sqrt{3}}$$

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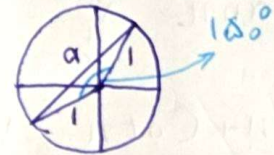
$$\Rightarrow 3a + 3b = a - b \Rightarrow 2a = -4b \rightarrow \frac{b}{a} = -\frac{1}{2}$$

$$P\left(\frac{1}{\sqrt{3}}, y\right) \Rightarrow \cos \alpha = \frac{1}{\sqrt{3}} \rightarrow \alpha = 90^\circ - 71^\circ = 19^\circ \rightarrow$$

$$\alpha = \sqrt{1^2 + 1^2 - 2 \times 1 \times 1 \times \cos 150^\circ} = \sqrt{2 - \sqrt{3}}$$

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$$\Rightarrow \text{مسافت} = \sqrt{2 - \sqrt{3}} + 1 + 1 = \sqrt{2 - \sqrt{3}} + 2$$



$$\text{زاویه ی مسدود در یک ساعت} = \frac{\pi}{6} \rightarrow \frac{\frac{\pi}{6}}{\frac{\pi}{12}} = \frac{n \text{ min}}{60 \text{ min}} \rightarrow n = 20 \text{ دقیقه}$$

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$$\downarrow$$

$$2:40$$

$$\theta = |20h - \frac{11}{12}M| \Rightarrow 20 = |20 \times 3 - \frac{11}{12}M| \Rightarrow \begin{cases} 20 = 60 - \frac{11}{12}M \\ 20 = 60 + \frac{11}{12}M \end{cases}$$

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$$\Rightarrow \begin{cases} M = \frac{120}{11} \text{ min} \rightarrow \text{اولین بار} \\ M = 48 \text{ min} \rightarrow \text{دومین بار} \checkmark \end{cases}$$

$$\bigodot \rightarrow -\frac{1}{2} \leq \sin \alpha \leq 1 \Rightarrow -\frac{1}{2} \leq \frac{m-3}{5} \leq 1 \Rightarrow -\frac{5}{2} \leq m-3 \leq 5$$

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$$\Rightarrow \frac{1}{2} \leq m \leq 8 \rightarrow m \in \mathbb{Z}: \{1, 2, \dots, 8\} \rightarrow 8$$

$$\frac{\cos 1A^\circ - k \sin 1A^\circ}{-\cos 1A^\circ - \gamma \sin 1A^\circ} = \gamma \frac{\cos n = \frac{r}{\gamma}}{\sin n = 1} \rightarrow \frac{r-k}{-r-\gamma} = \frac{r-k}{-\gamma} = \gamma \rightarrow k = \frac{r}{\gamma}$$

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$$\gamma + \gamma \cos n = 1 - \cos n \rightarrow \gamma \cos n = -1 \rightarrow \cos n = -\frac{1}{\gamma} \rightarrow \sin n = \frac{\sqrt{\gamma}}{\gamma}$$

$$\Rightarrow \tan n = \frac{\frac{\sqrt{\gamma}}{\gamma}}{-\frac{1}{\gamma}} = -\sqrt{\gamma}, \cot n = -\frac{1}{\sqrt{\gamma}}$$

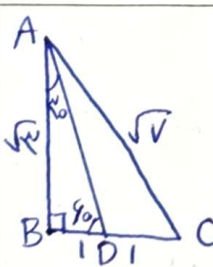
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$$\frac{\cot n + \cot n}{\tan n - \gamma \tan n} = \frac{\gamma \cot n}{-\tan n} = \frac{-\frac{\gamma}{\sqrt{\gamma}}}{\frac{\sqrt{\gamma}}{1}} = -\frac{\gamma}{\gamma} = -1$$

$$\alpha r_A = \beta r_B \Rightarrow \frac{4\pi}{10} r_A = \frac{9\pi}{10} r_B \Rightarrow \frac{r_A}{r_B} = \frac{\gamma}{\gamma}$$

$$\frac{S_A}{S_B} = \frac{\pi r_A^2}{\pi r_B^2} = \left(\frac{\gamma}{\gamma}\right)^2 = \frac{9}{\gamma}$$

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$AB = \cot 30^\circ = \sqrt{3} \Rightarrow S_{ABD} = \frac{\sqrt{3}}{2}, S_{ABD} = \frac{AB \times BD}{2}$
 $S_{ABC} = \frac{AB \times BC}{2} \Rightarrow \frac{9}{4} = \frac{\sqrt{3} \times 1}{2} \Rightarrow BD = \frac{3}{2}$
 $\Rightarrow \sin C = \frac{\sqrt{3}}{\sqrt{2}}, \cos C = \frac{1}{\sqrt{2}}$

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$$\Rightarrow \sin \gamma C = \gamma \sin C \cos C = \gamma \times \frac{\sqrt{\gamma}}{\sqrt{\gamma}} \times \frac{\gamma}{\sqrt{\gamma}} = \frac{\gamma \sqrt{\gamma}}{\sqrt{\gamma}}$$

$$S_{ABM} = \frac{\gamma \times \gamma}{\gamma} = \gamma, S_{CMN} = \frac{1 \times 1}{\gamma}, S_{AND} = \frac{\gamma \times \gamma}{\gamma} = \gamma, S_{ABCD} = 9$$

$$\rightarrow S_{AMN} = 9 - \gamma - \gamma - \frac{1}{\gamma} = \frac{9}{\gamma} = \frac{1}{\gamma} AM \times AN \times \sin \theta = \frac{1\gamma}{\gamma} \sin \theta$$

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$$\Rightarrow \sin \theta = \frac{\Delta}{1\gamma}$$