

بیاض

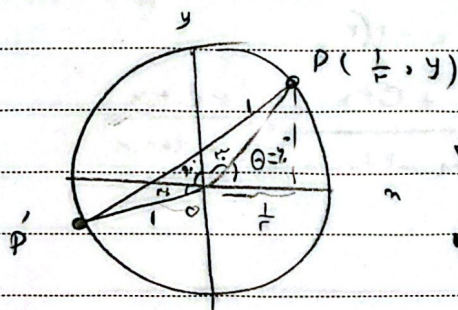
کتاب

کتاب

$$\frac{a \sin \frac{\pi}{4} + b \cos \frac{\pi}{4}}{a \sin \frac{11\pi}{4} + b \cos \frac{11\pi}{4}} = \tan \frac{\pi}{4} \rightarrow \frac{-\frac{\sqrt{2}}{2}a - \frac{\sqrt{2}}{2}b}{-\frac{a}{2} + \frac{b}{2}} = -\frac{\sqrt{2}}{2} \quad (1)$$

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

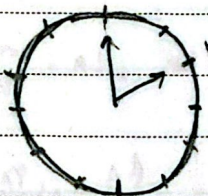
$$\rightarrow \frac{a+b}{a-b} = -1 \rightarrow a+b = -a+b \rightarrow 2a = 0 \rightarrow a = 0$$



$$\cos \theta = \frac{1}{2} \rightarrow \theta = 60^\circ$$

$$\rightarrow \angle POP' = 120^\circ \rightarrow S = \frac{1}{2}ab \sin \theta$$

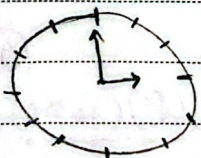
$$\rightarrow S_{\triangle POP'} = \frac{1}{2} \times 1 \times 1 \times \sin 120^\circ = \frac{1}{2} \times \frac{\sqrt{3}}{2} = \frac{\sqrt{3}}{4}$$



$$\frac{\pi}{12} = \frac{D}{12} \rightarrow D = 30^\circ$$

$$\rightarrow ? = \frac{30^\circ}{12} = 2.5^\circ \text{ دقیقه}$$

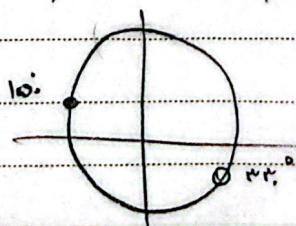
(2)



$$H = 12, M = 12 \rightarrow \frac{11M}{2} - H = \frac{11 \times 12}{2} - 12 = 66 - 12 = 54$$

(3)

$$-\frac{\pi}{4} < \theta < \frac{\pi}{4} \rightarrow -\frac{1}{\sqrt{2}} < \sin \theta < \frac{1}{\sqrt{2}} \rightarrow -\frac{1}{\sqrt{2}} < \frac{m-1}{2} < \frac{1}{\sqrt{2}}$$



$$\rightarrow -\frac{1}{\sqrt{2}} < \frac{m-1}{2} < \frac{1}{\sqrt{2}} \rightarrow \frac{1}{\sqrt{2}} < m < \frac{3}{\sqrt{2}}$$

$$m = \{1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12\} \rightarrow m \in \mathbb{Z}$$

(4)

$$\sin\left(\frac{\pi}{2} + 15^\circ\right) + K \cos\left(\frac{\pi}{2} - 15^\circ\right)$$

(4)

$$= \mu \rightarrow \frac{\cos 15^\circ - K \sin 15^\circ}{-\cos 15^\circ - \mu \sin 15^\circ} = \mu$$

$$\cos(\pi - 15^\circ) + \mu \sin(\pi + 15^\circ)$$

صورت و منفرج کسر را به

نسبت تقسیم می کنیم

$$\frac{1 - K(\tan 15^\circ)}{-1 - \mu \tan 15^\circ} = \mu$$

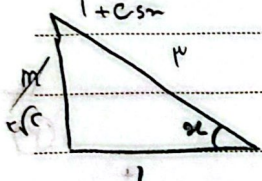
$$\frac{1 - K(\mu \tan 15^\circ)}{-1 - \mu(\mu \tan 15^\circ)} = \mu$$

$$\frac{1 - \frac{K}{\mu}}{-1 - \frac{1}{\mu}} = \mu$$

$$\frac{\frac{\mu - K}{\mu}}{-\frac{\mu + 1}{\mu}} = \mu \rightarrow \frac{\mu - K}{-\mu - 1} = \mu \rightarrow \mu - K = -\mu - 1 \rightarrow \boxed{K = 2\mu}$$

$$\frac{1 - \cos \alpha}{1 + \cos \alpha} = \mu \rightarrow \mu + \mu \cos \alpha = 1 - \cos \alpha \rightarrow \mu \cos \alpha = -1 \rightarrow \cos \alpha = -\frac{1}{\mu}$$

(5)



$$\mu^2 + 1 = q \rightarrow \mu^2 = 1 \rightarrow \mu = \sqrt{1} \rightarrow \sin \alpha = \frac{\sqrt{1}}{\mu}$$

$$\rightarrow \cot \alpha = \frac{-1}{\frac{\sqrt{1}}{\mu}} = -\frac{\mu}{1}, \tan \alpha = -\frac{1}{\mu}$$

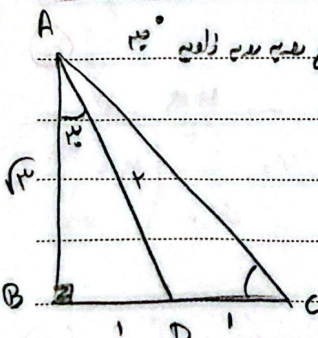
$$\tan\left(\frac{\pi}{2} - \alpha\right) = \cot(\alpha - \pi) = \frac{\cot \alpha + \cot \pi}{\tan \alpha - \mu \tan \pi} = \frac{\cot \alpha + 0}{- \tan \alpha}$$

$$\frac{\mu(-\frac{\sqrt{1}}{\mu})}{-(-\mu \sqrt{1})} = \frac{-\frac{\sqrt{1}}{\mu}}{\mu \sqrt{1}} = \boxed{-\frac{1}{\mu}}$$

(6)

$$\frac{10A}{1A} = \frac{R}{A} \rightarrow R = \frac{10A}{A} \xrightarrow{\text{ضرب در } \omega} L = R\omega \rightarrow L_B = \frac{9A}{10} \times R_B, L_A = \frac{10A}{10} \times R_A$$

$$L = L_B \rightarrow \frac{9A}{10} \times R_B = \frac{10A}{10} \times R_A \rightarrow \frac{R_A}{R_B} = \frac{9}{10} \xrightarrow{A = R\omega} \frac{A_A}{A_B} = \left(\frac{R_A}{R_B}\right)^2 = \boxed{\frac{9}{10}}$$



$$15^\circ \text{ ضلع های مجاور زاویه } \alpha \rightarrow \text{ضلع های مجاور } \alpha \rightarrow AD = 2 \rightarrow AB^2 + 1 = 4$$

(7)

$$\rightarrow AB = \sqrt{10} \rightarrow S_{ABC} = \frac{AB \times BC}{2} = \frac{\sqrt{10} \times (1 + DC)}{2} = \frac{\sqrt{10} \times (1 + 1)}{2} = \sqrt{10}$$

$$DC + 1 = 2 \rightarrow DC = 1 \xrightarrow{AB^2 = AC^2} AB^2 + BC^2 = AC^2$$

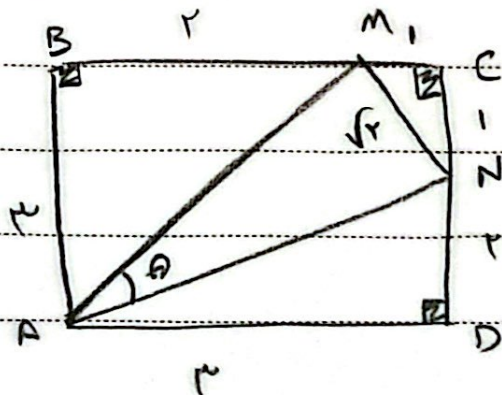
$$\rightarrow 10 + 1 = AC^2 \rightarrow AC = \sqrt{11} \rightarrow \sin \hat{C} = \frac{AD}{AC} = \frac{2}{\sqrt{11}}$$

$$\rightarrow \cos \hat{C} = \frac{DC}{AC} = \frac{1}{\sqrt{11}} \rightarrow \sin \hat{C} = \mu \sin \hat{C} \cos \hat{C}$$

$$\Rightarrow \sin \hat{C} = \mu \left(\frac{2}{\sqrt{11}}\right) \left(\frac{1}{\sqrt{11}}\right) = \frac{2\mu}{11} = \boxed{\frac{2\mu}{11}}$$

Year. . . Month. . . Day. . .

Subject: . . .



$$\rightarrow MN^2 = MC^2 + NC^2 \Rightarrow MN^2 = 1^2 + 1^2 \Rightarrow MN = \sqrt{2}$$

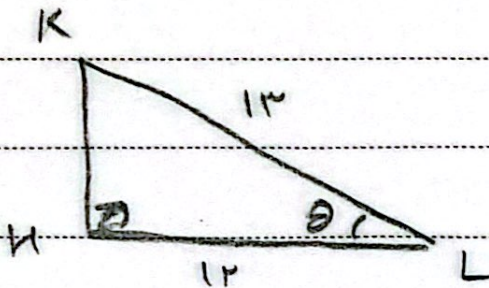
$$\rightarrow AM^2 = AB^2 + MB^2 \rightarrow AM^2 = 4^2 + 1^2 \rightarrow AM = \sqrt{17}$$

$$AN^2 = ND^2 + AD^2 \rightarrow AN^2 = 2^2 + 3^2 \rightarrow AN = \sqrt{13}$$

مسئله
کمی

$$MN^2 = AM^2 + AN^2 - 2AM \cdot AN \cdot \cos \theta \rightarrow 2 = 17 + 13 - 2(17) \cos \theta$$

$$2 = 30 - 34 \cos \theta \rightarrow 34 \cos \theta = 28 \rightarrow \cos \theta = \frac{28}{34} = \frac{14}{17}$$



$$KH^2 + LH^2 = KL^2 \rightarrow KH^2 + 15^2 = 17^2 \rightarrow KH^2 = 16$$

$$\rightarrow KH = 4 \rightarrow \sin \theta = \frac{KH}{KL} = \frac{4}{17} \checkmark$$