

باز هم سر

۲۰ افین!

۱) $m_2 \frac{dy}{dx} = \frac{m-k}{k+1} = \frac{m-k}{4} = -\frac{1}{4} \rightarrow m-k = -4 \rightarrow |m-k| = 4 \rightarrow dy$ (۲)

$AB = \sqrt{(4)^2 + (3)^2} = \sqrt{16+9} = \sqrt{25} = 5 \rightarrow S = 5 \checkmark$

۲) $AB = \sqrt{14+9} = \sqrt{23} \rightarrow \textcircled{1} \quad m_{AB} = m_{CD} = -\frac{k}{k} = -1 \rightarrow -1 \cdot m = -1 \rightarrow m = 1 \rightarrow \left(\frac{k}{k}, y\right)$ (۲) $D(\frac{2}{4}, y)$

$m_{BC} \times m_{CD} = -1 \xrightarrow{m_{CD} = \frac{k}{k}} m_{BC} = \frac{k}{k} = \frac{y-1}{-\frac{k}{k}} \rightarrow y-1 = -k \rightarrow y = -1$

$\rightarrow C(\frac{k}{k}, -1) \rightarrow D(-\frac{1}{k}, 0)$

$BC = \sqrt{(\frac{k}{k})^2 + (-1)^2} = \frac{1}{k} \quad \textcircled{2} \rightarrow \text{مساحت} = k \left(\frac{1}{k} + 0\right) = 1 \checkmark$

۳) $y = \left(\frac{-km}{m^2-1}\right)x + \frac{k}{m^2-1}$ $\left\{ \begin{array}{l} \rightarrow \frac{-km}{m^2-1}, \sqrt{k} \rightarrow \sqrt{k}m^2 + km - \sqrt{k} = 0 \\ \rightarrow |m_1 - m_2| = \frac{\sqrt{14}}{\sqrt{k}} = \frac{k}{k} = 1 \end{array} \right. \quad \textcircled{2}$

۴) $BC: y = kx - k \rightarrow y = -kx + k = 0$

$m = \frac{1-k}{k+1} = \frac{1}{k} \rightarrow y = kx + b \rightarrow b = -k$ (۲)

$AB = \frac{|9+k-1|}{\sqrt{5}} = \frac{8}{\sqrt{5}} = 2\sqrt{5} \checkmark$

۵) $AB, BC \rightarrow -kx + v = kx - \frac{1}{k} \rightarrow x = \frac{v}{2k} \rightarrow y = \frac{1}{2}$ (۲)

$y = -kx + v \quad y = \frac{1}{k}x - \frac{1}{k}$

$\rightarrow BH = \frac{|k-1v-1|}{\sqrt{14+9}} = \frac{1}{5} = 1, 1 \checkmark$

۶) $\frac{x}{-\frac{k}{k}} + \frac{y}{-k} = 1 \rightarrow -kx - \frac{k}{k}y = \frac{1}{k} \rightarrow \frac{x}{-\frac{1}{k}} - \frac{y}{k} = \frac{1}{k} \rightarrow x = -\frac{1}{k} \rightarrow y = \frac{1}{k}$ (۲)

۷) $d_1: y = ax + 1$ $d_2: y = \frac{1}{a}x + \frac{1}{a}$ $\rightarrow a = \frac{1}{a} \rightarrow a^2 = 1 \rightarrow a = \pm 1$ $\rightarrow a = 1 \rightarrow \begin{cases} y = x + 1 \\ y = x \end{cases} \rightarrow \text{خط}$ $\rightarrow a = -1 \rightarrow \begin{cases} y = -x + 1 \\ y = -x \end{cases}$

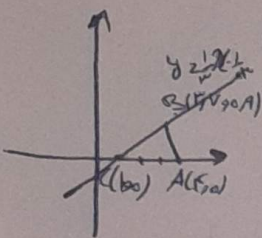
$\rightarrow d_1: y = x + 1$ $d_2: y = x$ $\rightarrow \frac{|1-0|}{\sqrt{1+1}} = \frac{1}{\sqrt{2}} = \frac{\sqrt{2}}{2}$ (۱)

$\frac{1}{\sqrt{2}} \rightarrow \frac{\sqrt{2}}{2}$ (۱)

(I) (II) $\rightarrow S = \frac{1}{2} \times \frac{\sqrt{2}}{2} \times \frac{\sqrt{2}}{2} = \frac{1}{4} = \frac{1}{10} \checkmark$ (۲)

1)

$$x - \frac{1}{2}y + 1 \rightarrow y = \frac{1}{2}x - \frac{1}{2} = d_1$$



$$d_2: y = -\frac{1}{2}x + b \rightarrow 0 = -\frac{1}{2}(2) + b \rightarrow b = 1 \rightarrow d_2: y = -\frac{1}{2}x + 1$$

(2)

$$d_1 \perp d_2 \rightarrow \frac{1}{2}x - \frac{1}{2} = -\frac{1}{2}x + 1 \rightarrow x = 1 \rightarrow y = 0 \rightarrow A(1, 0)$$

$$\rightarrow B(2, 0) \text{ و } A(1, 0)$$

پس خط به خود را در هر دو جهت عمود است و زمانیکه از C عبور کند به خط عمود می افتد و از A عبور می کند

$$C(1, 0) \rightarrow y = \frac{1}{2}x - \frac{1}{2} \rightarrow x = 2$$



$$\rightarrow C(1, 0) \rightarrow A(2, 0) \rightarrow AC = \sqrt{1 + 0} = 1$$

$$\rightarrow BH = \frac{1}{2} \rightarrow A$$

$$\rightarrow S_{ABC} = \frac{0.9 \times 1}{2} = \frac{0.9}{2} = \frac{9}{20}$$

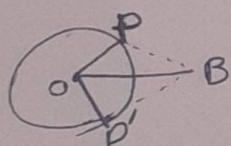
2)

$$m = \frac{b-a}{-\frac{1}{4} + \frac{1}{4}} = \frac{b-a}{\frac{1}{4}} \rightarrow b-a = \frac{m}{4}$$

$$A(-\frac{1}{4}, a) \rightarrow B(-\frac{1}{4}, b) \rightarrow AB = \sqrt{(\frac{1}{4})^2 + (\frac{m}{4})^2} = \sqrt{\frac{1}{16} + \frac{m^2}{16}} = \frac{\sqrt{1+m^2}}{4}$$

(2)

3)



$$\left. \begin{aligned} m_{OP} &= \frac{r}{r} \\ m_{OP} \times m_{OP'} &= -1 \end{aligned} \right\} \rightarrow m_{OP'} = -\frac{r}{r}$$

(2)

$$r = OP = OP' = \sqrt{1^2 + 1^2} = \sqrt{2}$$

$$\textcircled{I} \Rightarrow m_{OP'} = -\frac{r}{r} \rightarrow OA: y = -\frac{r}{r}x + b \xrightarrow{(0,0)} y = -\frac{r}{r}x \rightarrow P(1, -\frac{r}{r})$$

$$\textcircled{II} \Rightarrow OP = \sqrt{1^2 + 1^2} = \sqrt{2} \rightarrow \frac{r}{r}x = \frac{r}{r} \rightarrow x = 1 \rightarrow y = -1$$

$$\rightarrow x_P + x_{P'} = x_O + x_B \rightarrow x_B = -1$$

$$\rightarrow y_P + y_{P'} = y_O + y_B \rightarrow y_B = -1$$

$$\rightarrow x_B = y_B = -1$$

$$\rightarrow P'(-1, -1)$$