

کتاب شماره ۱۷

بازم به A

امیدین بزرگوار است

Year Month Date ()

$$m = \frac{\Delta y}{\Delta x} = \frac{m-k}{4-(-2)} = \frac{m-k}{4} \cdot \frac{-1}{2} \rightarrow -4 = 2(m-k) \rightarrow m-k = -2$$

فاصله بین نقطه $\rightarrow d = \sqrt{(4-(-2))^2 + (m-k)^2} = \sqrt{36 + 4} = \sqrt{40} \rightarrow S = d^2 = (\sqrt{40})^2 = 40$

C و D $\rightarrow$ موازی اند $\rightarrow AB = CD \rightarrow AB = \sqrt{4^2 + 4^2} = 4\sqrt{2}$ A(-1, 4) (2)
B(3, 1)

$$\Rightarrow AB = CD = d \Rightarrow CD = \sqrt{(x+1+m)^2 + 4^2} = \sqrt{(2m+1)^2 + 4} = d$$

$$\rightarrow 2d = 4 + (2m+1)^2 \rightarrow (2m+1)^2 = 14 \Rightarrow 2m+1 = \sqrt{14} \rightarrow m = \frac{\sqrt{14}-1}{2} \rightarrow \begin{cases} C = (\frac{\sqrt{14}}{2}, 4) \\ D = (-\frac{\sqrt{14}}{2}, 4+4) \end{cases}$$

$$\rightarrow C(\frac{\sqrt{14}}{2}, 4), D(-\frac{\sqrt{14}}{2}, 4+4) \rightarrow CD = \sqrt{(4)^2 + (4)^2} = 4\sqrt{2}$$

نقطه $\rightarrow AC = BD \rightarrow \begin{cases} AC = \sqrt{(\frac{\sqrt{14}}{2})^2 + (4-4)^2} \\ BD = \sqrt{(4)^2 + (4+4)^2} \end{cases}$
 $\rightarrow (\frac{\sqrt{14}}{2})^2 + (4-4)^2 = (4)^2 + (4+4)^2$

$$\rightarrow \frac{14}{4} + 0 = 16 + 16 \rightarrow 14 = 32 \rightarrow 14y = -12 \rightarrow y = -1$$

$$\rightarrow AC = \sqrt{\frac{14}{4} + \frac{100}{4}} = \sqrt{\frac{114}{4}} = \frac{\sqrt{114}}{2} \rightarrow P = 2(\omega + \frac{\sqrt{114}}{2})$$

$$\rightarrow AB = \sqrt{14}, BC = \frac{5\sqrt{14}}{4} \rightarrow P = 2(AB + BC) = \frac{11\sqrt{14}}{2}$$

$$2mx + (m^2-1)y = 4 \rightarrow \text{شیب} = \frac{-2m}{m^2-1} \rightarrow \tan 45 = \sqrt{2}$$

$$\sqrt{2}m^2 + 2m - \sqrt{2} = 0 \quad \Delta = 14 \rightarrow m_1 - m_2 = \frac{\sqrt{\Delta}}{|a|} = \frac{4}{\sqrt{2}} = \frac{2\sqrt{2}}{1}$$

$$BC = \frac{1}{\sqrt{2}} = \sqrt{2} \rightarrow BC: 2m - 4 = y \rightarrow d_{A-BC} = \frac{|2(1) - 4 - 3|}{\sqrt{2^2 + (-1)^2}} = \frac{10}{\sqrt{5}} = 2\sqrt{5}$$

تکلیف شماره ۱۰

نورمحمد سرمدی

امید بنیرعلی

Year: Month: Date: ()

$$AB: y + 2m = 1 \quad AC: 8y - 3m = 17 \quad BC: 2y - 5m = 19$$

$$B(m, 1-2m) = B(m, \frac{17-8m}{8}) \rightarrow 2(1-2m) - 5m = 19$$

$$-11m = -34 \rightarrow m = \frac{34}{11} \rightarrow y = 1 \rightarrow B(\frac{34}{11}, 1)$$

$$d = \frac{|14(1) - 3(14) - 17|}{\sqrt{1^2 + (-3)^2}} = \frac{|-17|}{\sqrt{10}} = \frac{17}{\sqrt{10}}$$

$$l_1: y - am = 1 \rightarrow l_2: ay - m = a-1 \rightarrow m l_1 = a, m l_2 = \frac{1}{a}$$

$$\rightarrow a = \frac{1}{a} \rightarrow a^2 = 1 \rightarrow a = \pm 1 \rightarrow \begin{cases} \text{if } a = 1 \rightarrow \begin{cases} l_1: y + m = 1 \\ x + 1 = 2 \neq 1 \end{cases} \\ \text{if } a = -1 \rightarrow \begin{cases} l_1: y - m = 1 \\ x - 1 = 0 \end{cases} \end{cases}$$

$$\text{if } a = +1 \rightarrow l_1: y - m = 1 \rightarrow x - 1 = 1 \rightarrow x = 2 \rightarrow a = +1$$

$$\rightarrow l_1: y - m = 1, l_2: y = m \rightarrow d = \frac{|1 \cdot 1 - 1|}{\sqrt{1^2 + (-1)^2}} = \frac{0}{\sqrt{2}} = 0 \rightarrow d + d' = 8$$

$$\rightarrow \text{Sol } d = \frac{V}{\sqrt{2}} \times \frac{1}{\sqrt{2}} = \frac{V}{2}$$

$$A(4, 0), m = -3y = 1 \rightarrow d = \frac{|1 \cdot 4 - 3(0) - 1|}{\sqrt{1^2 + (-3)^2}} = \frac{3}{\sqrt{10}} = \frac{3}{\sqrt{10}} = CB(\frac{3}{\sqrt{10}})$$

$$\frac{1}{2} \times \frac{3}{\sqrt{10}} \times \frac{3}{\sqrt{10}} = \frac{9}{20} \rightarrow \text{مساحت مثلث} \quad | \quad AC \perp AB = \frac{3}{\sqrt{10}} \rightarrow AB \perp AC$$

$$\rightarrow m = -3y = 1 \rightarrow \text{مستقیم موازی}$$

$$\rightarrow \frac{1}{2} \times 3 \times 11 = \frac{33}{2} = \frac{33}{2}$$

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

$$\text{ضلع} = \sqrt{(a-b)^2 + (\frac{1}{a} - \frac{1}{b})^2} = \sqrt{(\frac{\sqrt{a}}{y})^2 + (\frac{1}{y})^2} = \frac{1}{\sqrt{a}} \rightarrow \text{مساحت} = \frac{1}{2} \times \frac{\sqrt{a}}{y} \times \frac{1}{\sqrt{a}} = \frac{\sqrt{a}}{2y}$$

$$m_l = -\frac{r}{s} \rightarrow y + r = -\frac{r}{s}(x + s) \xrightarrow{\times s} sy + rs = -r(x + s) \rightarrow sy + rs = -rx - rs$$

$$\rightarrow rx + sy + 2rs = 0 \rightarrow m_{\perp} = \frac{s}{r} \rightarrow y = \frac{s}{r}x + b$$

$$x^2 + y^2 = r^2 \rightarrow y = \frac{s}{r}x + b \rightarrow x^2 + (\frac{s}{r}x + b)^2 = r^2 \rightarrow d = \frac{|sb|}{\sqrt{r^2 + (-s)^2}} = \frac{|sb|}{\sqrt{r^2 + s^2}}$$

$$\frac{|sb|}{\sqrt{r^2 + s^2}} = d \rightarrow |sb| = d\sqrt{r^2 + s^2} \rightarrow |b| = \frac{d\sqrt{r^2 + s^2}}{s} \rightarrow b = \pm \frac{d\sqrt{r^2 + s^2}}{s} \rightarrow y = \frac{s}{r}x \pm \frac{d\sqrt{r^2 + s^2}}{s}$$

$$\left. \begin{array}{l} rx + sy + 2rs = 0 \\ y = \frac{s}{r}x + \frac{d\sqrt{r^2 + s^2}}{s} \end{array} \right\} \rightarrow rx + s(\frac{s}{r}x + \frac{d\sqrt{r^2 + s^2}}{s}) + 2rs = 0 \rightarrow x = -\frac{r}{s}, y = 1$$

$$\rightarrow \text{نقطه تماس} = (-\frac{r}{s}, 1) \rightarrow -\frac{r}{s} \times 1 = -\frac{r}{s}$$