

« زهرالردان ریاضی هم داشت » ، « آهرا » ، « طیب ۱۷ »

$$A(4, -1), B(1, 1)$$

$$a_{AM} = \frac{1+4}{1-4} = -\frac{5}{3} \rightarrow m = \frac{1}{V} \quad b = \frac{E}{V}$$

$$y = ax + b \rightarrow y = \frac{1}{V}x + b \quad (1, 1) \rightarrow 1 = \frac{1}{V} + b \rightarrow y = \frac{1}{V}x + \frac{E}{V}$$

$$A(1, 1), B(-4, 1), C(-1, 3)$$

$$BC = \sqrt{(-3)^2 + 2^2} = 5$$

$$BC \text{ معادله} \rightarrow m = \frac{1-3}{-4+1} = -\frac{2}{3} \rightarrow y = -\frac{2}{3}x + b \quad (-1, 3) \rightarrow b = \frac{5}{3}$$

$$\rightarrow y = -\frac{2}{3}x + \frac{5}{3} \quad AH = \frac{|1+4 - \frac{5}{3}|}{\sqrt{1+\frac{4}{9}}} = \frac{\frac{1}{3}}{\frac{5}{3}} = \frac{1}{5}$$

$$BC - AH = 5 - \frac{1}{5} = \frac{24}{5}$$

$$4y - x = 5 \rightarrow 4y - 2x = 15$$

$$4y = ax + 2 \rightarrow 4y - ax = 2 \rightarrow a = 2$$

$$\text{قطر دایره} \rightarrow \frac{|15-2|}{\sqrt{4+1}} = \frac{13}{\sqrt{5}} = \frac{13\sqrt{5}}{5} \rightarrow r = \frac{13\sqrt{5}}{10}$$

$$S = \pi r^2 \rightarrow \pi \times \left(\frac{13\sqrt{5}}{10}\right)^2 = \frac{169\pi}{10}$$

$$CH \text{ فاصله از } H \text{ تا } C = m \left(\frac{E+1}{1-4}, \frac{3}{1-4} \right)$$

$$m_{AB} = \frac{3-1}{1-4} = -\frac{2}{3} \rightarrow m_{CH} = \frac{3}{2}$$

$$y = 1x + b \quad (-1, 3) \rightarrow -3 = -1 + b \rightarrow b = -2 \rightarrow y = x - 2$$

$$m_{CH} = \frac{|1-3+2|}{\sqrt{1}} = \frac{0}{1} = 0$$

$$(m+1)x - (2m-4)y + 1 = 0 \rightarrow (2m-2)x + (4-m)y - 5 = 0$$

$$\frac{-(m+1)}{-(2m-4)} = \frac{-(2m-2)}{4-m} = -1 \rightarrow \frac{-m-1}{-2m+4} = \frac{2-2m}{4-m}$$

$$2m^2 - 1Em + 2 = 3m^2 - 2m + 2$$

$$m^2 - 13m + 11 = 0 \rightarrow \Delta = 121 - 44 = 77$$

$$\left. \begin{aligned} AB &= x + 2y = 3 \\ AC &= y = 2x - 1 \\ BC &= x + y = 1 \end{aligned} \right\} \xrightarrow{\text{نقاطات}} \begin{aligned} 2y &= 3 - x \\ y &= 2x - 1 \\ 3 - x &= 2x - 1 \end{aligned} \quad \begin{aligned} y &= 2x - 1 \\ y &= -x + 1 \end{aligned}$$

$x + 2y = 3$
 $x + y = 1$
 $\xrightarrow{\text{نقاطات}} A(1, 1) \quad B(\frac{0}{3}, \frac{1}{3}) \quad C(0, -1)$
 $m_{BC} = \frac{\frac{1}{3} + 1}{\frac{0}{3} - 0} = \frac{\frac{4}{3}}{-\frac{1}{3}} = -4$

$AB = \frac{|1 + 1 - 3|}{\sqrt{2}} = \sqrt{2}$
 $m = (\frac{\frac{0}{3} + 0}{\frac{1}{3} - 0}, \frac{\frac{1}{3} - 1}{\frac{1}{3} - 0}) = (\frac{1}{3}, \frac{2}{3})$
 $Am = \sqrt{(1 - \frac{1}{3})^2 + (1 - \frac{2}{3})^2} = \frac{\sqrt{5}}{3}$
 $\frac{Am}{AB} = \frac{\frac{\sqrt{5}}{3}}{\sqrt{2}} = \frac{\sqrt{10}}{6}$

$y = \frac{1}{2}x + b \rightarrow x = 0 \rightarrow B = b$
 $\rightarrow y = 0 \rightarrow A = 2b$

$\text{فاصله } (0, 0) \rightarrow \frac{|0 + 0 - b|}{\frac{\sqrt{5}}{2}} = \sqrt{2} \rightarrow 2|b| = 1 \rightarrow |b| = \frac{1}{2}$
 $A(1, 0) \quad B(0, \frac{1}{2}) \quad AB = \sqrt{1 + \frac{1}{4}} = \frac{\sqrt{5}}{2}$

①: $my - fx = pm \rightarrow y = \frac{f}{m}x + p$
 ②: $y + mx = x + p \rightarrow y = (1 - m)x + p$
 $\rightarrow y = 0 \rightarrow x = -\frac{p}{1 - m}$
 $x = 0 \rightarrow y = \frac{p}{1 - m}$

$\text{فاصله بین نقطه } (0, 0) \rightarrow \frac{0}{p} = \frac{1}{p} \times 2 \left| \frac{m}{1 - m} - \frac{p}{1 - m} \right|$
 $\left| \frac{m}{1 - m} - \frac{p}{1 - m} \right| = \frac{0}{p} \rightarrow \frac{m - p}{1 - m} = \frac{0}{p} \rightarrow (m - p)(1 - m) = 0$
 $m^2 - pm + p = 0 \rightarrow m = \frac{p \pm \sqrt{p^2 - 4p}}{2}$
 $m = \frac{p \pm \sqrt{p(p - 4)}}{2}$

-9

$$y = 2x - 3 \quad m(2, -2)$$

نقطه داده $\rightarrow (2, 1)$

$$\frac{x_{A'} + 2}{2} = 2 \rightarrow x_{A'} = 2, \quad \frac{y_{A'} + 1}{2} = -2 \rightarrow y_{A'} = -5$$

$$d' = y = 2x + b \rightarrow -5 = 4(2) + b \rightarrow y = 2x - 9$$

-10

$$y = x + 2, \quad A(1, 2)$$

$$m_{AA'} = -1 \quad (1, 2) \rightarrow y = -x + b, \quad 2 = -1 + b \rightarrow b = 3$$

$$\rightarrow y = -x + 3 \quad \begin{cases} y = x + 2 \\ y = -x + 3 \end{cases} \Rightarrow x = -1, y = 1 \quad m(-1, 1)$$

$$x_B = \frac{x_A + x_{A'}}{2} \rightarrow -1 = \frac{1 + x_{A'}}{2} \rightarrow x_{A'} = -3$$

$$y_B = \frac{y_A + y_{A'}}{2} \rightarrow 1 = \frac{2 + y_{A'}}{2} \rightarrow y_{A'} = 0$$

$$2b - a = 11 + 3 = 10$$