

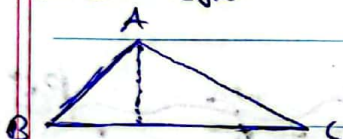
$$\left(\frac{x_1 + x_2}{2}, \frac{y_1 + y_2}{2} \right) \xrightarrow[\text{میانه}]{\text{نقطه میانی}} \left(\frac{1+5}{2}, \frac{1+(-1)}{2} \right) \Rightarrow (3, 0)$$

$$m_{AB} = \frac{y_A - y_B}{x_A - x_B} = \frac{-1 - 1}{5 - 1} = \frac{-2}{4} = -\frac{1}{2} \quad \begin{matrix} \text{شیب} \\ -\Delta y = -1 \end{matrix} \quad m = \frac{1}{\Delta y} = \frac{1}{2}$$

$$y = \frac{1}{2}x + b \quad (3, 0) \Rightarrow \frac{1}{2}x + b = 1 \Rightarrow b = \frac{1}{2} - \frac{3}{2} = -1$$

$$y = \frac{1}{2}x - 1$$

~~فاصله بین دو نقطه~~



$$L_{BC} = \sqrt{(5-3)^2 + (-1-(-1))^2} = \sqrt{4+0} = \sqrt{4} = 2$$

$$\text{فاصله از نقطه} = \sqrt{(y_A - y_B)^2 + (x_A - x_B)^2}$$

$$m_{BC} = \frac{y_B - y_C}{x_B - x_C} = \frac{-1 - 1}{5 - 1} = -\frac{1}{2} \rightarrow -\frac{1}{2} m_{AH} = -1 \Rightarrow m_{AH} = \frac{1}{2}$$

$$\text{فاصله از نقطه} \rightarrow \frac{1}{2}x + b = 1 \Rightarrow b = \frac{1}{2} - \frac{3}{2} = -1$$

$$y = \frac{1}{2}x - 1$$

$$\text{فاصله از نقطه} = \frac{|c - c'|}{\sqrt{a^2 + b^2}}, \quad \begin{matrix} \text{فاصله از نقطه} \\ \text{موازی} \end{matrix} \quad \begin{matrix} 2y - x - 1 = 0 \\ \times 2 \end{matrix} \Rightarrow \begin{matrix} 4y - 2x - 2 = 0 \\ -2x + 4y + 1 = 0 \end{matrix}$$

$$d = \frac{|1 - 2|}{\sqrt{4 + 4}} = \frac{1}{\sqrt{2}} \quad \text{فاصله} \Rightarrow \frac{1}{\sqrt{2}} \times \frac{1}{2} = \frac{1}{2\sqrt{2}}$$

$$S_{\text{مربع}} = 5 \times 5 = \left(\frac{5}{\sqrt{2}} \right)^2 = \frac{25}{2} = \frac{12.5}{1}$$

$$m_{AB} = \frac{y_A - y_B}{x_A - x_B} = \frac{1 - 0}{1 - 0} = 1 \rightarrow m_{CH} = -1 \Rightarrow m_{CH} = 1$$

$$\left(\frac{x_A + x_B}{2}, \frac{y_A + y_B}{2} \right) = M_{AB} = (1, 1)$$

خطایابی نقطه
برای پیدا کردن معادله خط

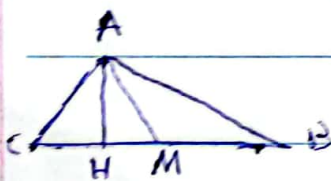
$$-1 + b = -1 \Rightarrow b = 0 \rightarrow y = x - 1 \quad y + x - 1 = 0$$

$$d_{MH} = \frac{|-1 + 1 - 1|}{\sqrt{1+1}} = \frac{1}{\sqrt{2}} \times \frac{\sqrt{2}}{\sqrt{2}} = \frac{\sqrt{2}}{2}$$

$$\frac{m-1}{-m+1} = \frac{-m+1}{1-m} \Rightarrow m^2 + 1 = 0$$

$$\frac{+m-1}{-m-1} = \frac{-m+1}{1-m} \Rightarrow 10m - 10 - m^2 + 1 = m^2 + 1 - m - 1$$

$$m^2 - 10m + 1 = 0 \Rightarrow 10 - 10m = 0 \Rightarrow m = 1$$



$$A \Rightarrow \frac{x}{1} + \frac{y}{1} = 1 \Rightarrow x + y = 1$$

$$AB \Rightarrow y = -x + 1$$

$$\Rightarrow \frac{1-x}{1} = 1 - x \Rightarrow 1 - x = 1 - x \Rightarrow x = 0, y = 1$$

$$B \Rightarrow \frac{1-x}{1} = 1 - x \Rightarrow 1 - x = 1 - x \Rightarrow x = 1, y = 0$$

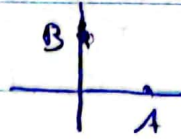
$$C \Rightarrow \frac{1-x}{1} = 1 - x \Rightarrow 1 - x = 1 - x \Rightarrow x = 0, y = 1$$

$$M = \left(\frac{0+1}{2}, \frac{1+0}{2} \right) = \left(\frac{1}{2}, \frac{1}{2} \right)$$

$$m_{AH} =$$

|B|

$$\sqrt{\frac{1}{x}}$$



$$y = -\frac{1}{x}x + B \Rightarrow y = B$$

$$0 = -\frac{1}{x}x + B$$

$$\frac{|B|}{\sqrt{\frac{1}{x}}} = \frac{B}{\frac{1}{x}} \Rightarrow 2B = \sqrt{2} \Rightarrow B = \frac{\sqrt{2}}{2}$$

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

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$$2x - 3 = 1 \Rightarrow (1, 1)$$

$$2x + b = 2 \Rightarrow b = -4$$

$$y = 2x - 4$$

$$y = x + 1 \xrightarrow{\text{ضرب در 2}} y = -x + b \xrightarrow{\text{بجایگذاری نقطه}} -1 \times 1 + b = 2 \Rightarrow b = 3$$

$$y = -x + 3 \xrightarrow{\text{بجایگذاری نقطه}} x + 1 = -x + 3 \Rightarrow 2x = 2 \Rightarrow x = 1$$

$$y = 2$$

$$(1, 2) \rightarrow (-1, 4) \rightarrow (a, b)$$

$$2b - a = 12$$

$$2 \times 4 - (-1) = 12$$