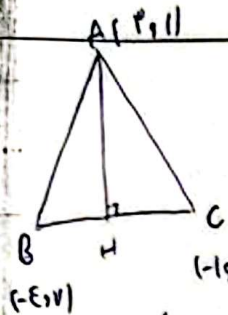


$$B(2,1) \quad A(1,-2) \Rightarrow \frac{dy}{dx} \Rightarrow \frac{-2-1}{1-2} = -1 \Rightarrow m' = \frac{1}{1} \Rightarrow \frac{1}{1}x + b = y$$

$$\Rightarrow \left(\frac{1}{1}, \frac{1-2}{1}\right) \Rightarrow (1, -1) \Rightarrow x=1 \Rightarrow \frac{1}{1} + b = -1 \Rightarrow b = -2 \Rightarrow \frac{1}{1}x - 2 = y$$

1



$$|BC| = \sqrt{(x_B - x_C)^2 + (y_B - y_C)^2} \Rightarrow \sqrt{9+1} = \sqrt{10} = \sqrt{2} \cdot \sqrt{5} = \sqrt{2} \cdot \sqrt{5} = \sqrt{10}$$

$$m_{BC} \Rightarrow \frac{dy}{dx} \Rightarrow \frac{2-3}{1-(-1)} = -\frac{1}{2} \Rightarrow -\frac{1}{2}x + b = y \Rightarrow x = -1 \Rightarrow \frac{1}{2}x + b = y$$

$$\Rightarrow \frac{1}{2}x + b = y \Rightarrow x = -1 \Rightarrow \frac{1}{2}(-1) + b = 3 \Rightarrow b = 3 + \frac{1}{2} = \frac{7}{2}$$

$$\text{فاصله } \frac{|ax_0 + by_0 + c|}{\sqrt{a^2 + b^2}} \Rightarrow \frac{|-1(2) + 2(1) - 2|}{\sqrt{1+4}} = 2 \Rightarrow 2 - 2 = \sqrt{10} \Rightarrow BC \text{ ارتفاع } AH$$

2

$$y - ax - 2 \parallel y - x - 1 \Rightarrow y - ax - 2 = y - x - 1 \Rightarrow x = 1$$

$$\frac{|c - c'|}{\sqrt{a^2 + b^2}} \Rightarrow \frac{|-2 - (-1)|}{\sqrt{1+4}} = \frac{1}{\sqrt{5}} \Rightarrow \frac{1}{\sqrt{5}} = \frac{1}{\sqrt{5}} \Rightarrow \frac{1}{\sqrt{5}} = \frac{1}{\sqrt{5}}$$

$$\delta = \pi r^2 \Rightarrow \delta = \frac{9}{2} \pi$$

3

$$-x + b = y \Rightarrow B(1,1) \Rightarrow -1 + b = 1 \Rightarrow b = 2$$

10

$$\left(\frac{1}{2}, \frac{1}{2}\right) \Rightarrow M(1,1) \Rightarrow |AM| = \sqrt{(x_A - x_M)^2 + (y_A - y_M)^2} \Rightarrow \sqrt{1+1} = \sqrt{2}$$

$$m_{AB} \Rightarrow \frac{dy}{dx} = \frac{1-1}{2-1} = 0 \Rightarrow -x + b = y \Rightarrow -x + b = 1 \Rightarrow x = 1 \Rightarrow \frac{1}{2}x + b = y$$

$$\Rightarrow \frac{|-1(1) + 2(1) - 2|}{\sqrt{1+4}} = \frac{1}{\sqrt{5}} \Rightarrow \frac{1}{\sqrt{5}} = \frac{1}{\sqrt{5}} \Rightarrow \frac{1}{\sqrt{5}} = \frac{1}{\sqrt{5}}$$

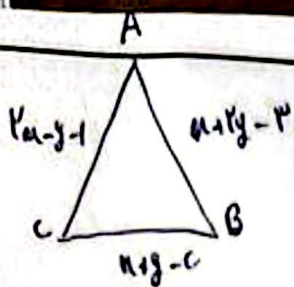
4

فرض کنیم که این دو خط موازی باشند. پس داریم: $\frac{y_B - y_A}{x_B - x_A} = \frac{y_C - y_B}{x_C - x_B}$

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

$$\Rightarrow -10m + 10 + 1m^2 - 1m = 1m - 1m^2 - 1 + 1m \Rightarrow 2m^2 - 12m + 10 = 0$$

5



$$\Rightarrow \begin{cases} x-1 & x-2 \\ x-2 & x-3 \end{cases} \Rightarrow \begin{cases} x-1 & x-2 \\ x-2 & x-3 \end{cases} \Rightarrow \begin{cases} x-1 & x-2 \\ x-2 & x-3 \end{cases}$$

$$A \in BC \Rightarrow \frac{|1-1|}{\sqrt{2}} \Rightarrow \frac{1}{\sqrt{2}} \Rightarrow \frac{1}{\sqrt{2}} \Rightarrow \frac{1}{\sqrt{2}}$$

$$B \in \begin{cases} x-2 & x-3 \\ x-3 & x-4 \end{cases} \Rightarrow \begin{cases} x-2 & x-3 \\ x-3 & x-4 \end{cases} \Rightarrow \begin{cases} x-2 & x-3 \\ x-3 & x-4 \end{cases}$$

$$m = -\frac{a}{y} \Rightarrow -\frac{1}{y} = -\frac{a}{y} \Rightarrow \frac{1}{y} = \frac{a}{y} \Rightarrow a+y+1=0$$

$$\Rightarrow \frac{|a+b+c|}{\sqrt{a^2+b^2+c^2}} \Rightarrow \frac{|0+0+1|}{\sqrt{0+0+1}} \Rightarrow \frac{|1|}{\sqrt{1}} \Rightarrow \frac{1}{1} = 1 \Rightarrow |1| \leq \sqrt{1} \Rightarrow C \leq 1$$

$$\textcircled{1} \quad my - \epsilon = 1 \quad \textcircled{2} \quad x + mn = a + 1 \quad \textcircled{3} \Rightarrow y = (1-m)/a + 1 \Rightarrow \textcircled{1} \text{ و } \textcircled{2} \text{ را حل می‌کنیم}$$

$$m((1-m)/a + 1) - \epsilon = 1 \Rightarrow m(1-m)/a + m - \epsilon = 1 \Rightarrow m(1-m) - \epsilon = a - m + 1 \Rightarrow 0 = 0$$

$$\Rightarrow \frac{1}{a} = \frac{1}{a} \Rightarrow \frac{1}{a} = \frac{1}{a} \Rightarrow \frac{1}{a} = \frac{1}{a} \Rightarrow \frac{1}{a} = \frac{1}{a} \Rightarrow \frac{1}{a} = \frac{1}{a} \Rightarrow \frac{1}{a} = \frac{1}{a}$$

$$q_m = \frac{q_A + q'_A}{2} \Rightarrow y = x - 1 \Rightarrow x = 0 \Rightarrow x' = \frac{0 + q'_A}{2} \Rightarrow q'_A = 1$$

$$y_m = \frac{y_A + y'_A}{2} \Rightarrow -1 = -\frac{1 + y'_A}{2} \Rightarrow y'_A = -1$$

$$x + b = y \Rightarrow x = 1 \Rightarrow y = -1 \Rightarrow a + b = -1 \Rightarrow b = -1$$

$$\Rightarrow x - 1 = y$$

$$y = a + b \Rightarrow y - a - b = 0 \Rightarrow 1 \Rightarrow a + y + b = 0 \Rightarrow A(1,1) \Rightarrow P_1 C = 0 \Rightarrow C = -1$$

$$\Rightarrow a + y - 1 = 0 \Rightarrow \begin{cases} a + y - 1 = 0 \\ y - a - 1 = 0 \end{cases} \Rightarrow \begin{cases} a + y - 1 = 0 \\ y - a - 1 = 0 \end{cases} \Rightarrow \begin{cases} a + y - 1 = 0 \\ y - a - 1 = 0 \end{cases}$$

$$-1 = \frac{a + m'}{2} \Rightarrow -1 = \frac{1 + m'}{2} \Rightarrow m' = -1$$

$$A'(a, b) \Rightarrow A'(-1, 1) \Rightarrow P_1 B = 0 \Rightarrow P_1 C = 0 \Rightarrow 1 = 0$$

$$M = \left(\frac{1}{2}, \frac{1}{2} \right) \Rightarrow M = \left(\frac{1}{2}, \frac{1}{2} \right) \Rightarrow |AM| = \sqrt{\left(\frac{1}{2} - 1 \right)^2 + \left(\frac{1}{2} - 1 \right)^2} = \frac{\sqrt{2}}{2} \Rightarrow \frac{\sqrt{2}}{2} = \frac{\sqrt{2}}{2} \Rightarrow \frac{\sqrt{2}}{2} = \frac{\sqrt{2}}{2}$$