

$$B(2, 1) \quad A(4, -4)$$

① نقطه میانی AB $\left\{ \begin{array}{l} \text{عدد منفی} \\ \text{نسبت آن} \end{array} \right.$

$$\Rightarrow \textcircled{1} \rightarrow \text{نسبت نقطه میانی} \rightarrow x_m = \frac{x_1 + x_2}{2} = 3, \quad y_m = \frac{y_1 + y_2}{2} = -1$$

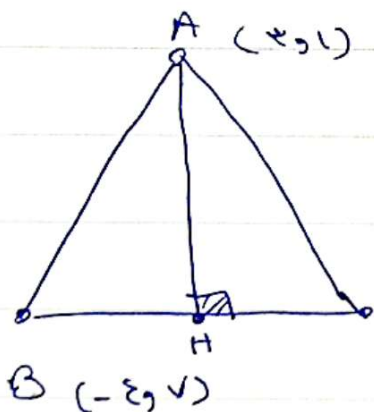
$$\textcircled{2} \rightarrow m_{AB} = \frac{y_A - y_B}{x_A - x_B} = \frac{-4 - 1}{4 - 2} = \frac{-5}{2} = -\frac{5}{2}$$

$$\Rightarrow m_{\text{عمود منتهی}} = \frac{1}{m_{AB}} = \frac{1}{-\frac{5}{2}} = -\frac{2}{5} \rightarrow y = -\frac{2}{5}x + b$$

$$\frac{x=3}{y=-1} \rightarrow -1 = \frac{3}{-\frac{2}{5}} + b \Rightarrow b = \frac{4}{5} \Rightarrow \boxed{y = -\frac{2}{5}x + \frac{4}{5}}$$

$$AC(3, 1) \quad BC(-5, 7) \quad C(-1, 3)$$

②



$$BC = \sqrt{(x_B - x_C)^2 + (y_B - y_C)^2}$$

$$\Rightarrow BC = \sqrt{(-5 - (-1))^2 + (7 - 3)^2} = \sqrt{16 + 16} = \sqrt{32} = 4\sqrt{2}$$

$AH \rightarrow$ فاصله نقطه A از خط BC $\Rightarrow$ ابتدا باید معادله خط BC را یافت و فاصله نقطه A از خط BC را بدست آورد.

بیاد بیاوریم $\leftarrow$ صبر کنید

$$m_{BC} = \frac{\Delta y}{\Delta x} = \frac{V-3}{-2+1} = \frac{-1}{-1} = 1 \quad A(3,1)$$

$$\text{جایگاه B} \rightarrow y = \frac{-1}{-1}x + b \rightarrow V = \frac{14}{-1}x + b \Rightarrow b = \frac{14}{-1}$$

$$\begin{matrix} x = -1 \\ y = V \end{matrix} \quad y = \frac{-1}{-1}x + \frac{14}{-1} \rightarrow y + \frac{1}{-1}x - \frac{14}{-1} = 0$$

$$\text{فاصله از خط} = \frac{|ax_0 + by_0 + c|}{\sqrt{a^2 + b^2}}$$

$$\rightarrow d = \frac{|3 \times \frac{1}{-1} + 1 \times 1 - \frac{14}{-1}|}{\sqrt{\frac{1}{1} + 1}} = \frac{|\cancel{3} + 1 - \cancel{14}|}{\frac{\sqrt{2}}{1}} = \frac{10}{\frac{\sqrt{2}}{1}} = 10\sqrt{2}$$

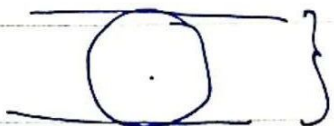
$$\rightarrow |5 - 2| = 3$$

$$Py - x = V \quad Ky = ax + P \rightarrow Ey - ax - P = 0 \quad (3)$$

★ ابتدا حول ۲ خط موازی می کشیم که شیبها برابر ۱ و ۰ باشد یعنی:

$$m = \frac{\text{ضریب } x}{\text{ضریب } y} = \frac{1}{1} = \frac{a}{1} \Rightarrow a = 1$$

★ چون ۲ خط موازی کشیدیم فاصله شان از هم برابر قرار است



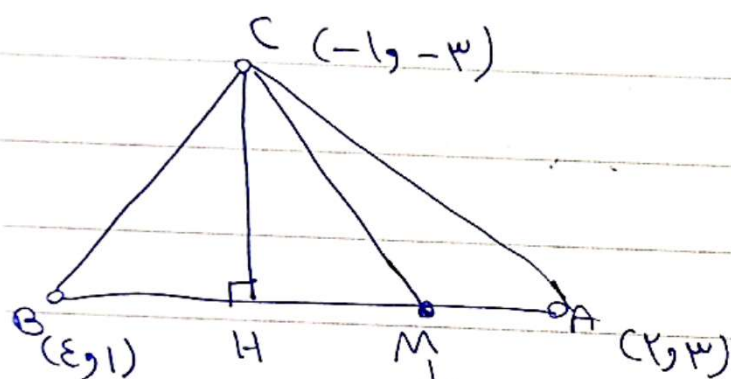
مماس و
موازی

① $Py-n-1$ so

② $Py-n-v$ so

$$\text{Slope} = \frac{|c-c'|}{\sqrt{a^2+b^2}} = \frac{|-v+1|}{\sqrt{v+1}} = \frac{4}{\sqrt{5}} = \sqrt{5}$$

$$\Rightarrow \text{Slope} = \frac{4}{\sqrt{5}} \rightarrow \delta = \pi r^2 \Rightarrow \delta = \pi \times \frac{4 \times 4}{5} = \frac{16\pi}{5}$$



$$\text{Slope} \Rightarrow \frac{v+1}{1} = 3, \frac{1+3}{1} = 2 \Rightarrow (3, 2)$$

$$AB \text{ line} \rightarrow m = \frac{y}{-x} = -1 \Rightarrow y = -x + d$$

$$\text{CH} \rightarrow m' = 1 \Rightarrow y' = x - 2$$

$$\rightarrow x - 2 = -x + d \Rightarrow x = \frac{d}{2}, y = \frac{d}{2}$$

$$\Rightarrow MH = \sqrt{\left(\frac{1}{2}\right)^2 + \left(\frac{1}{2}\right)^2} = \frac{\sqrt{2}}{2}$$

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

$$(3m-2)x + (8-m)y - 7 = 0$$

مورد دوم $\Rightarrow mm' = -1$ نسبت x منبسط = نسبت y منبسط

$$\Rightarrow \frac{m+1}{3m-2} \times \frac{3m-2}{8-m} = -1$$

$$\frac{m+1}{3m-2} = \frac{8-m}{3m-2} \Rightarrow 3m^2 + 3m - 2m - 2 = 10m - 2$$

$$-3m^2 + 8m$$

$$\Rightarrow 3m^2 + 3m - 2 = -3m^2 + 8m - 2 \rightarrow 6m^2 - 5m + 1 = 0$$

$$\Delta = b^2 - 4ac = 25 - 12 \times 8 \times 1 = -31$$

منفی تواند
محاسبه نشود.

$$\begin{cases} AB: x + 2y = 3 \\ AC: y = 2x - 1 \\ BC: x + y = 4 \end{cases}$$

$$B \rightarrow AB \text{ و } BC$$

$$\Rightarrow \frac{3-x}{2} = 4-x \Rightarrow 3-x = 8-2x \Rightarrow x = 5$$

$$x = 5$$

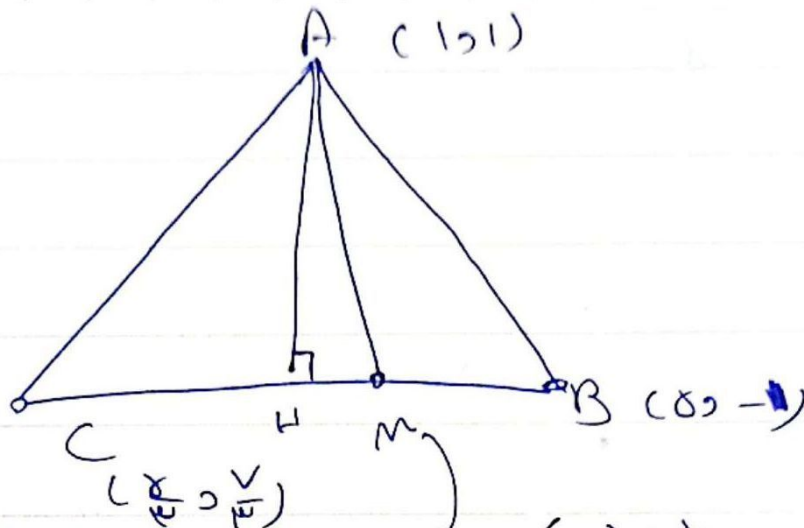
$$y = -1$$

$$A \rightarrow AC \times AB \Rightarrow \frac{3-x}{2} = 2x-1 \Rightarrow 3-x = 4x-2 \Rightarrow x = 1$$

$$y = 1$$

$$C \rightarrow AC \times BC = 2x-1 = 4-x \Rightarrow x = \frac{5}{3}$$

$$y = \frac{1}{3}$$



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

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

$$AM = \sqrt{\left(\frac{1}{2} + 1 \right)^2 + \left(1 - \frac{1}{2} \right)^2} = \sqrt{\left(\frac{3}{2} \right)^2 + \left(\frac{1}{2} \right)^2} = \sqrt{\frac{9}{4} + \frac{1}{4}} = \sqrt{\frac{10}{4}} = \frac{\sqrt{10}}{2}$$

AH ⊥ BC; |A| = 1, |B| = 1, |C| = 1 ⇒ BC = x + y - ε, ε = 0

$$\Rightarrow AH = \frac{|1 \times 1 + 1 \times 1 - \epsilon|}{\sqrt{2}} = \frac{2}{\sqrt{2}} = \sqrt{2}$$

$$\Rightarrow \frac{AM}{AH} = \frac{\frac{\sqrt{10}}{2}}{\sqrt{2}} = \frac{\sqrt{10}}{2\sqrt{2}} = \frac{\sqrt{5}}{2}$$

$$m_s = \frac{1}{r}$$

$$\text{خط} = -\frac{1}{r} x - b$$

(V)

$$\Rightarrow \underbrace{y + \frac{1}{r}x + b = 0}_{\text{فاصله از مبدأ}} \xrightarrow{\quad} \frac{|b|}{\sqrt{1 + \frac{1}{r^2}}} = \frac{b}{\frac{\sqrt{1+r^2}}{r}} = \frac{r \cdot b}{\sqrt{1+r^2}} = \text{فاصله از مبدأ}$$

$$\left\{ \begin{array}{l} \text{طول} \\ \text{از مبدأ} \end{array} \right\} \rightarrow y = 0 \Rightarrow 0 + \frac{1}{r}x + b = 0 \Rightarrow \frac{1}{r}x = -b \Rightarrow \underline{x = -10}$$

$$\alpha = (0 \ 0 \ 5) \quad \beta = (-10 \ 0 \ 0)$$

$$= \sqrt{100 + 25} = \underline{5\sqrt{5}} \quad \text{جواب}$$

(1)

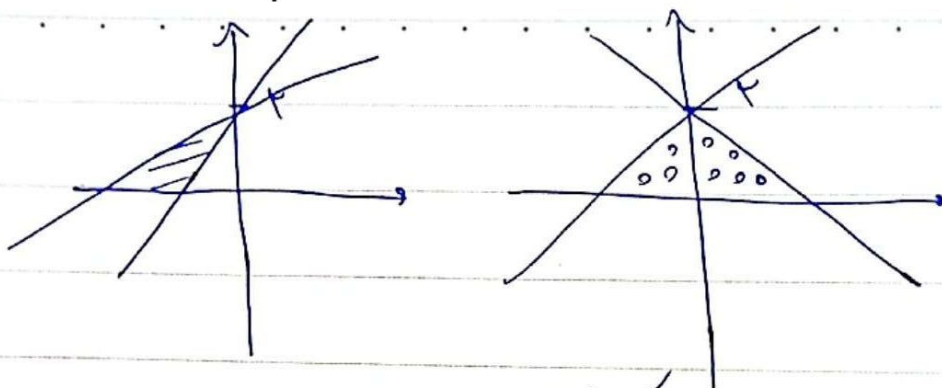
$$my - rx = rm \quad y + mx = x + r$$

$$S = \frac{d}{p} \quad m ??$$

$$\textcircled{1} \rightarrow y - \frac{r}{m}x = r \Rightarrow y = \frac{r}{m}x + r$$

$$\textcircled{2} \rightarrow y = (1-m)x + r$$

← عرض از مبدأ هر ۲ برابر ۲ است ←



حالت های $\uparrow \uparrow$ خنثی اجباری $\rightarrow$ که در آن ها ارتفاع برابر γ و فاصله γ است و اختلاف طول از مبدأ های γ فاصله است $\rightarrow$ مثال از مبدأ ها را محاسبه می کنیم :

$$① \quad y = \frac{\gamma}{m}x + \gamma \quad y = 0 \Rightarrow 0 = \frac{\gamma}{m}x + \gamma \Rightarrow -\gamma = \frac{\gamma}{m}x$$

$$\Rightarrow x = \frac{-\gamma m}{\gamma} = -m$$

$$② \quad y = (1-m)x + \gamma \Rightarrow 0 = (1-m)x + \gamma \Rightarrow x = \frac{\gamma}{1-m}$$

$$= \frac{\gamma}{m-1} \quad \delta = \frac{\gamma \times \gamma}{\gamma} = \frac{\gamma \times \gamma}{\gamma} = \frac{\gamma}{\gamma} = 1 = \frac{\gamma}{\gamma}$$

$$= \left| \frac{m}{\gamma} + \frac{\gamma}{m-1} \right| = \frac{\gamma}{\gamma} \Rightarrow ① \quad \left| \frac{m^2 - m + \gamma}{\gamma m - \gamma} \right| = \frac{\gamma}{\gamma}$$

$$\cdot m^2 - m + \gamma = \gamma m - \gamma \Rightarrow m^2 - m + \gamma = \gamma m - \gamma \Rightarrow m = \gamma \quad ①$$

$$② \quad \frac{m^2 - m + \gamma}{\gamma m - \gamma} = \frac{\gamma}{\gamma} \Rightarrow m^2 - m + \gamma = -\gamma m + \gamma$$

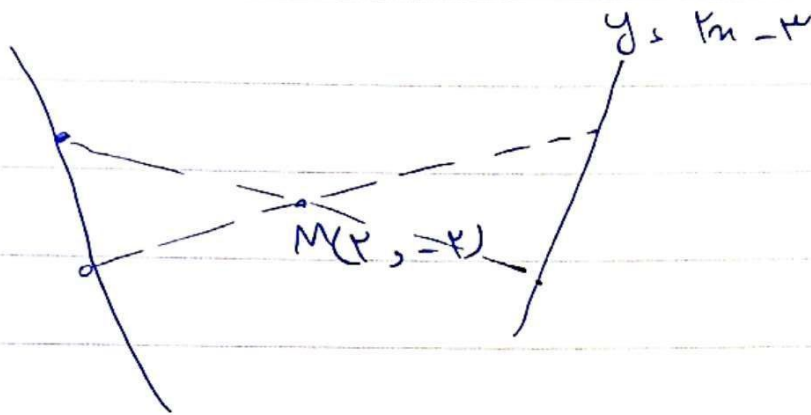
$$\Rightarrow m^2 + \gamma m = 1$$

سمت چپ

$$\Rightarrow -1 \times \gamma = (-\gamma)$$

$$y = (\mu - \mu) \quad M(\mu, -\mu)$$

⑨



$$y_{\text{فلا}} \Rightarrow \alpha \Rightarrow n = 0 \Rightarrow y = -\mu \xrightarrow{\text{min}} \frac{n\alpha + n\alpha'}{\mu} = \mu$$

$$\frac{n\alpha'}{\mu} = \mu$$

$$\Rightarrow n\alpha' = \mu$$

$$\frac{y\alpha + y\alpha'}{\mu} = -\mu \Rightarrow \frac{-\mu + y\alpha'}{\mu} = -\mu \Rightarrow y\alpha' = -\mu$$

$$\alpha' = (\mu, -1)$$

$$\beta \rightarrow n = 1, y = -1 \Rightarrow \frac{n\beta + n\beta'}{\mu} = \mu \Rightarrow \frac{1 + \beta'}{\mu} = \mu$$

$$\Rightarrow n\beta' = \mu$$

$$\frac{y\beta + y\beta'}{\mu} = -\mu \Rightarrow \frac{-1 + y\beta'}{\mu} = -\mu \Rightarrow y\beta' = -\mu$$

$$\frac{\text{دیر فلو}}{\beta', \alpha'} \rightarrow m' = \frac{\Delta y}{\Delta n} = \frac{-\mu + 1}{\mu - \mu} = \frac{-\mu}{-1} = \mu$$

$$\Rightarrow y' = \mu n - \mu$$

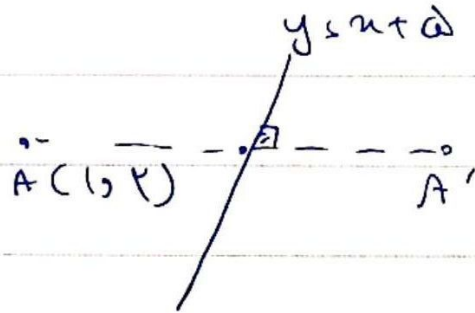
$$A(1, 2)$$

$$y = x + 1$$

①

$$A'(a, b)$$

$$b - a = ?$$



$$m_{AA'} \perp m_y \Rightarrow m_{AA'} = -1 \Rightarrow y_{AA'} = -x + 3$$

$$-x + 3 = x + 1 \Rightarrow x = 1 \quad y = 2 \rightarrow \text{تقاطع}$$

$$\frac{x_A + x_{A'}}{2} = x_M \Rightarrow \frac{1 + x_{A'}}{2} = 1 \Rightarrow -3 = x_{A'}$$

$$\frac{y_A + y_{A'}}{2} = y_M \Rightarrow \frac{2 + y_{A'}}{2} = 2 \Rightarrow y_{A'} = 4$$

$$\Rightarrow A' = (-3, 4) \quad b - a = 1 - (-3) = 4$$

