

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

① نقطه وسط AB $\leftarrow$ عدد منفی

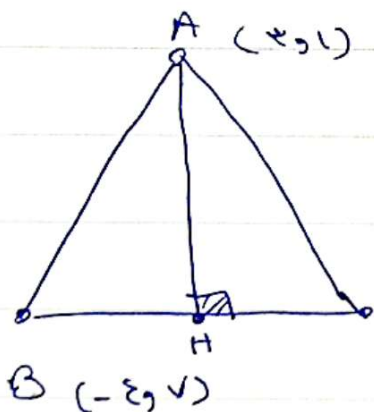
② $\Rightarrow$ ① $\rightarrow$ نقطه وسط $\rightarrow x_m = \frac{x_1 + x_2}{2} = 3$ و $y_m = \frac{y_1 + y_2}{2} = -1.5$

③ $\rightarrow m_{AB} = \frac{y_A - y_B}{x_A - x_B} = \frac{-4 - 1}{4 - 2} = \frac{-5}{2} = -2.5$

$\Rightarrow m_{\text{عمود منتهی}} = \frac{1}{-2.5} \rightarrow y = \frac{1}{-2.5}x + b$

$\frac{x=3}{y=-1.5} \rightarrow -1.5 = \frac{3}{-2.5} + b \Rightarrow b = \frac{4}{5} \Rightarrow y = \frac{1}{-2.5}x + \frac{4}{5}$

AC (3, 1) BC (-4, 7) C (-1, 3)



④ $BC = \sqrt{(x_B - x_C)^2 + (y_B - y_C)^2}$
 $\Rightarrow BC = \sqrt{(-4 - (-1))^2 + (7 - 3)^2} = \sqrt{9 + 16} = 5$

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

بیاد درم $\leftarrow$ صبر

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

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

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

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

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

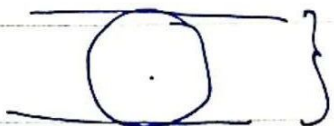
$$\rightarrow |5 - 2| = \underline{\underline{3}}$$

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

★ ابتدا حول ۲ خط موازی می کشیم که شیبها برابر $\frac{1}{a}$ داشته باشند:

$$m = \frac{\text{ضریب } x}{\text{ضریب } y} = \frac{1}{a} = \frac{a}{a} \Rightarrow \underline{\underline{a = 2}}$$

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

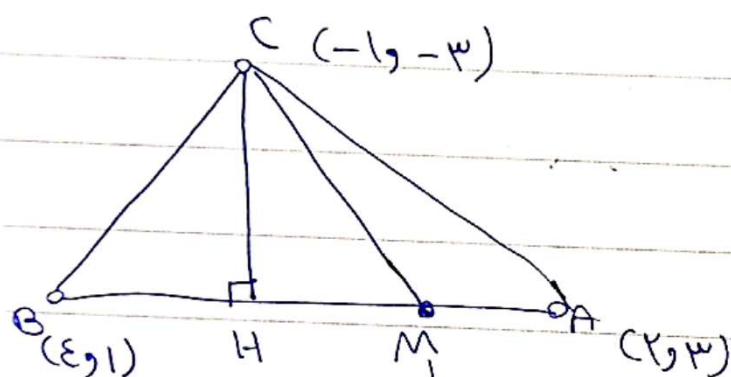


مماس و
موازی

① $Py-n-1$ so ② $Py-n-v$ so

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

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



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

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

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

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

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

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

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

$$\text{مورد ۳} \Rightarrow mm' = -1$$

$$\frac{-\text{ضرب } x}{\text{ضرب } y} = \text{ضرب } x$$

(۲)

$$\Rightarrow \frac{+(m+1)}{+(2m-4)} \times \frac{+(3m-2)}{(8-m)} = +1$$

$$\frac{m+1}{2m-4} = \frac{8-m}{3m-2} \Rightarrow \frac{m^2+m-2}{2m^2-4m} = \frac{8m-2}{3m^2-2m}$$

$$\Rightarrow 3m^2+m-2 = -2m^2+8m-2 \rightarrow 5m^2-7m+1=0$$

$$\Delta = b^2 - 4ac = 49 - 1 \times 5 \times 4 = -11 \Rightarrow \text{نمی‌تواند محاسبه شود}$$

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

$$B \rightarrow AB \text{ و } BC$$

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

$$x=5$$

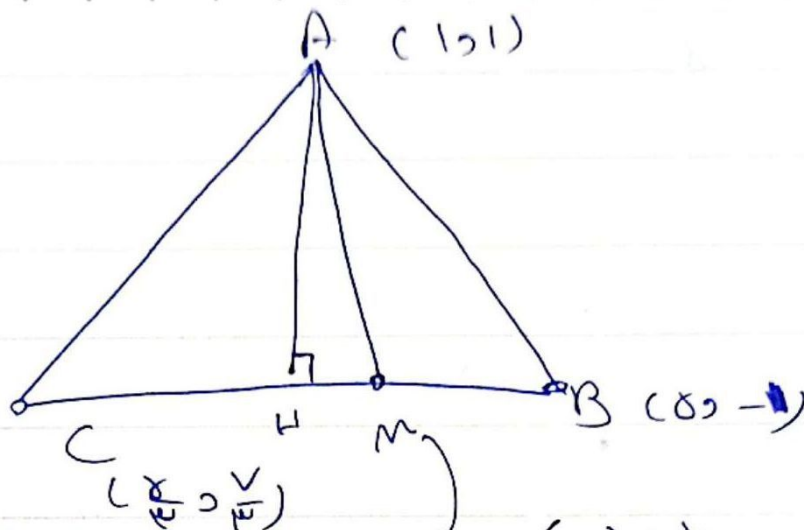
$$y=-1$$

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

$$y=1$$

$$C \rightarrow AC \times BC = 2x-1 = 4-x \Rightarrow x=5$$

$$y=1$$



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

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

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

AH ⊥ BC; |A| = 1, |B| = 1, |C| = 1/2

$$BC = x + y - \varepsilon$$

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

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

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

$$\text{خط} = -\frac{1}{r} x - b$$

(۲) (۷)

$$\Rightarrow y + \frac{1}{r}x + b = 0 \xrightarrow[\text{از مبدأ فاصله}]{\text{فاصله از مبدأ}} \frac{|b|}{\sqrt{1 + \frac{1}{r^2}}} = \frac{b}{\frac{\sqrt{1+r^2}}{r}} = \frac{b \cdot r}{\sqrt{1+r^2}} = \frac{2 \cdot \sqrt{5}}{\sqrt{1+4}} = \frac{2\sqrt{5}}{\sqrt{5}} = 2$$

فاصله از مبدأ

$$\text{طول از مبدأ} \rightarrow y = 0 \Rightarrow 0 + \frac{1}{r}x + 2 = 0 \Rightarrow \frac{1}{r}x = -2 \Rightarrow x = -10$$

$$\alpha = (0, 2) \quad \beta = (-10, 0)$$

$$= \sqrt{100 + 4} = \sqrt{104} = 2\sqrt{26} \quad \text{جواب}$$

(۱)

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

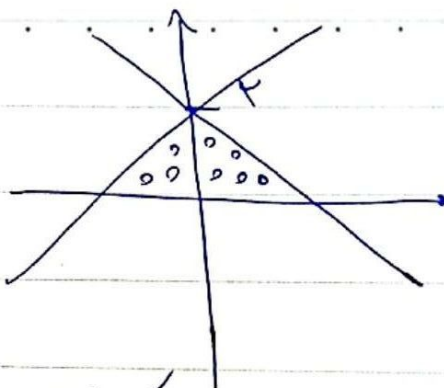
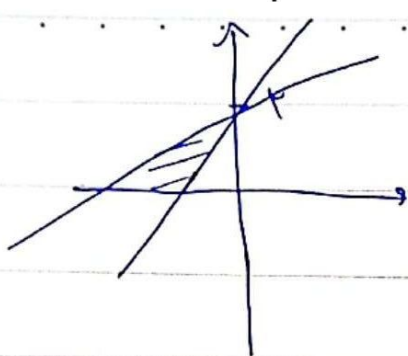
(۲)

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

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

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

← عرض از مبدأ هر ۲ برابر ۲ است ←



حالت های $\uparrow \uparrow$ خنثی اجباری $\rightarrow$ که در آن ها انتفاع برابر $\neq$ و فایده صاف
 که آن ها و اختلاف طول از مبدأ های $\neq$ فضا است $\rightarrow$ فضا از مبدأ
 ها را محاسبه می کنیم :

$$① \quad y_s = \frac{k}{m}x + r \xrightarrow{y_s=0} 0 = \frac{k}{m}x + r \Rightarrow -r = \frac{k}{m}x$$

$$\Rightarrow x = \frac{-rm}{k} = -\frac{m}{\frac{k}{r}}$$

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

$$= \frac{r}{m-1} \quad \delta = \frac{\text{ارتفاع} \times \text{عرض}}{2} = \frac{r \times d}{2} = \frac{\delta}{r} = d = \frac{\delta}{p}$$

$$= \left| \frac{m}{r} + \frac{r}{m-1} \right| = \frac{\delta}{r} \rightarrow ① \quad \left| \frac{m^2 - m + \varepsilon}{rm - r} \right| = \frac{\delta}{r}$$

$$\cdot m^2 - m + \varepsilon = \delta m - \varepsilon \Rightarrow m^2 - 2m + \varepsilon = 0 \Rightarrow m = \mu \quad ①$$

$$② \quad \frac{m^2 - m + \varepsilon}{rm - r} = \frac{\delta}{r} \Rightarrow m^2 - m + \varepsilon = -\delta m + \delta$$

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

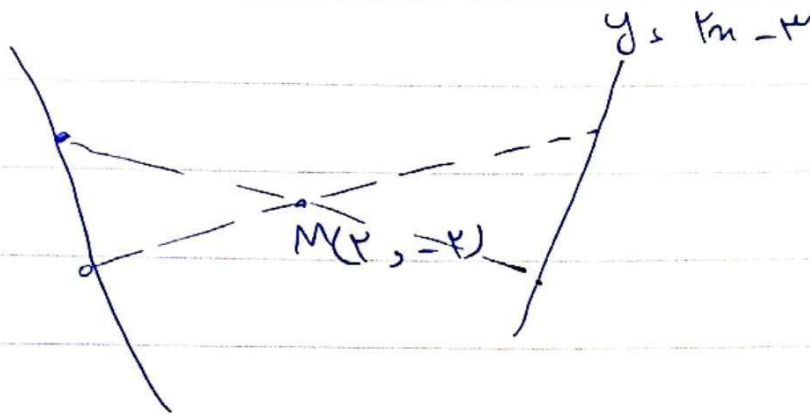
سه ضریب

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

$$y = (\mu - \mu)$$

$$M(\mu, -\mu)$$

② ⑨



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

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

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

$$\beta \rightarrow n \leq 1, y = -1 \Rightarrow \frac{n\beta + n\beta'}{\mu} = \mu \Rightarrow \frac{1 + \beta'}{\mu} = \mu \Rightarrow \beta' = \mu^2 - 1$$

$$\frac{y\beta + y\beta'}{\mu} = -\mu \Rightarrow \frac{-1 + y\beta'}{\mu} = -\mu \Rightarrow y\beta' = -\mu^2 + 1$$

$$\frac{\partial \text{فلا}}{\partial \beta', \alpha'} \rightarrow m' = \frac{\Delta y}{\Delta n} = \frac{-\mu^2 + 1}{\mu - \epsilon} = \frac{-\mu^2 + 1}{-1} = \mu^2 - 1$$

$$\Rightarrow y' = \mu^2 - 1$$

$$A(1, 2)$$

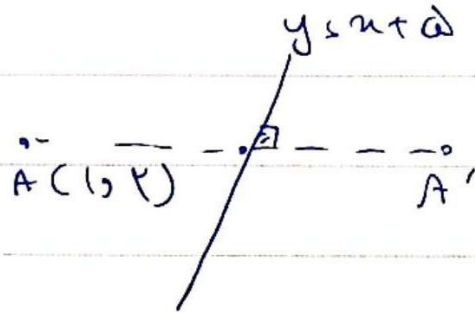
$$y = x + 1$$

(2)

(1)

$$A'(a, b)$$

$$b - a = ??$$



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

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

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

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

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

