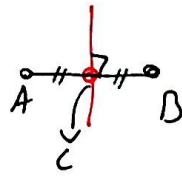


A: $\frac{4}{-9}$ B: $\frac{2}{1}$



معادله محور منصف را پیدا می‌کنیم

$$m_{AB} = \frac{1+9}{2-4} = -10 \Rightarrow m_d \times m_{AB} = -1 \rightarrow m_d = \frac{1}{10} \rightarrow d: y = \frac{1}{10}x + \frac{4}{5}$$

C: $\frac{3}{1} \Rightarrow y = x + 3$

$\overline{BC} = y = -\frac{4}{10}x + \frac{9}{10} \Rightarrow 4x + 3y - 9 = 0 \Rightarrow \overline{BC} = \sqrt{(4)^2 + (3)^2} = \sqrt{25} = 5$

$\overline{AH} = \frac{|4 \times 1 + 3 \times 4 - 9|}{\sqrt{25}} = 2$ $\overline{BC} - \overline{AH} = 3$

$d \parallel d' \quad \frac{a}{a'} = \frac{b}{b'} \quad \frac{4}{4} = \frac{-2}{-a} \Rightarrow a = 2$

قطر: $\frac{|14-2|}{\sqrt{25}} = \frac{12}{5} \Rightarrow r = \frac{6}{5} \quad S = \pi r^2 = \pi \times \frac{36}{25} = \frac{36}{25} \pi$

$M = \frac{3}{2} \quad m_{AB} = -1 \rightarrow \overline{AB}: y = -x + 5$

$\overline{AB} \perp \overline{CH} \Rightarrow m_{CH} = 1 \Rightarrow \overline{CH}: y = x - 2 \Rightarrow x - 2 = 5 - x \Rightarrow x = \frac{7}{2}$

$H: \frac{y}{x} \quad \overline{MH}: \sqrt{\frac{1}{4} + \frac{1}{4}} = \frac{\sqrt{2}}{2}$

$m = \frac{2-3m}{5-m} \quad m' = \frac{m+1}{2m-4} \quad m \times m' = -1$

$\frac{-3m^2 - m + 2}{-2m^2 + 14m - 20} = -1 \rightarrow -5m^2 - 13m + 18 = 0 \Rightarrow m = -1 \text{ or } m = \frac{18}{5}$

هیچ کدام در معادله اصلی کار نمی‌کنند
باز از آن هیچ مقدار m

$$\overline{AB}: 2y + x = 3$$

$$\overline{AC}: y = 2x - 1$$

$$\overline{BC}: x + y = 4$$

$$-\frac{x}{2} + \frac{y}{2} = 2x - 1 \Rightarrow 2,5x = \frac{5}{2} \Rightarrow x = 1 \rightarrow A: \begin{vmatrix} 1 \\ 1 \end{vmatrix}$$

$$2x - 1 = -x + 4 \rightarrow x = \frac{5}{3} \rightarrow C: \begin{vmatrix} \frac{5}{3} \\ \frac{5}{3} \end{vmatrix}$$

$$\frac{AM}{AH} = \frac{\sqrt{\frac{5}{9}}}{\frac{5}{6}} = \frac{5}{3}$$

$$-\frac{x}{2} + \frac{y}{2} = -x + 4 \rightarrow \frac{x}{2} = \frac{5}{2} \rightarrow B: \begin{vmatrix} 5 \\ -1 \end{vmatrix}$$

$$|A/x/B| = \sqrt{2} \times |AB| \rightarrow |B| = |A| \Rightarrow 2 \times |A|^2 = \sqrt{2} \times \sqrt{B^2 + A^2}$$

$$\Rightarrow 2|A|^2 = 10|A| \Rightarrow |A| = 5, |B| = 1 \Rightarrow \overline{AB} = \sqrt{10}$$

عرض از مبدأ بلسان و برابر با ۲ دارند پس از نقطه $\frac{0}{2}$ می گذرند، ارتفاع ۲

$$y = \frac{4}{m}x + 2$$

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

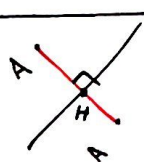
$$(1-m)x_1 + 2 = 0 \rightarrow x_1 = \frac{2}{m-1}, x_2 = -\frac{m}{2} \rightarrow |x_1 - x_2| = \frac{5}{2}$$

$$\left| \frac{2}{m+1} + \frac{m}{2} \right| = \frac{5}{2} \rightarrow \begin{cases} 2m^2 - 12m + 11 = 0 \rightarrow m = 3 \\ 2m^2 + 11m - 2 = 0 \rightarrow m = -2 \end{cases}$$

مقدار وجود دارد در $m = 3$ و $m = -2$ می شود $P = -1$

$$y = 2x - 3 \quad M: \begin{vmatrix} 2 \\ -2 \end{vmatrix}$$

$$m' = 2 \xrightarrow{x=1} A: \begin{vmatrix} 1 \\ -1 \end{vmatrix} \Rightarrow A': \begin{vmatrix} 3 \\ -3 \end{vmatrix} \Rightarrow y' = 2x + b \xrightarrow{\begin{vmatrix} 1 \\ -3 \end{vmatrix}} y' = 2x - 9$$



$$AH: y = -x + b \xrightarrow{H} y = -x + 3$$

$$\Rightarrow -x + 3 = x + 0 \Rightarrow x = -1 \quad H: \begin{vmatrix} -1 \\ 3 \end{vmatrix}$$

$$A' \begin{vmatrix} -3 \\ 4 \end{vmatrix} \Rightarrow \begin{cases} a = -3 \\ b = 4 \end{cases} \rightarrow 2b - a = 12 + 3 = 15$$