

$A(-2, k), B(8, m)$

$$m_{AB} = \frac{\Delta y}{\Delta x} = \frac{m-k}{9} = -\frac{1}{3} \rightarrow m-k = -3$$

$$AB = \sqrt{\Delta x^2 + \Delta y^2} = \sqrt{(8+2)^2 + (m-k)^2} = \sqrt{100 + 9} = \sqrt{109}$$

$$S = (\sqrt{109})^2 = 109$$

$A(-1, 4), B(3, 1), C(x, y), D(-1-x, y+3)$

$$x_A + x_C = x_B + x_D$$

$$-1 + x = 3 - 1 - x \rightarrow 2x = 3 \rightarrow x = \frac{3}{2}$$

$$m_{AB} \times m_{BC} = -1 \rightarrow m_{BC} = \frac{4}{3} = \frac{1-y}{\frac{3}{2}-\frac{3}{2}} \rightarrow y = -1$$

$$AB = \sqrt{\Delta x^2 + \Delta y^2} = \sqrt{9 + 16} = 5$$

$$BC = \sqrt{\Delta x^2 + \Delta y^2} = \sqrt{\frac{9}{4} + 16} = \frac{17}{2}$$

$$S = 2(5 + \frac{17}{2}) = 27$$

$$x \cdot m_x + (m^2 - 1)y = 3 \quad m = \tan 45^\circ = 1$$

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

$$(m' + 3)(m' - 1) = 0 \rightarrow m' = -3 \rightarrow m = \frac{-3}{1} = -3$$

$$m' = 1 \rightarrow m = \frac{1}{1} = 1$$

$$m_{\text{مستقیم}} = \frac{1}{5} - \left(-\frac{3}{5}\right) = \frac{4}{5} = \frac{4\sqrt{5}}{5}$$

$A(1, 1), B(3, 3), C(1, 9)$

$$m_{BC} = \frac{\Delta y}{\Delta x} = \frac{9-3}{1-3} = -3$$

$$y = ax + b \quad a = -3$$

$$y = 2(x) + b \rightarrow b = -3$$

$$y = 2x - 3$$

$$AH = \frac{|9 - 2 + 3|}{\sqrt{5}} = \frac{10}{\sqrt{5}} = \frac{10\sqrt{5}}{5} = 2\sqrt{5}$$

$$AH = \frac{|ax + by + c|}{\sqrt{a^2 + b^2}}$$

$AB: y - 2x = 3$

$AC: 4y - 3x = 12$

$BC: 4y - 3x = 12$

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$$\begin{cases} y + 2x = 3 \\ 4y - 3x = 12 \end{cases} \Rightarrow \begin{cases} -4y - 8x = -12 \\ 4y - 3x = 12 \end{cases}$$

$$-11x = -24 \rightarrow x = \frac{24}{11}, y = 1$$

$$BH = \frac{|a^2 + b^2 + c|}{\sqrt{a^2 + b^2}} = \frac{16 - 9 - 12}{5} = \frac{11}{5}$$

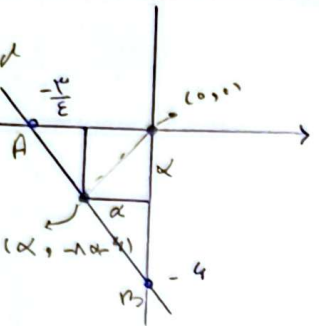
$m = \frac{a+4}{-\frac{3}{E}+0} = -1$

$y = -1x + b \xrightarrow{b=-4} y = -1x - 4$

$\begin{cases} \alpha = -1\alpha - 4 \\ -1\alpha - 4 \end{cases} \Rightarrow \alpha = -1\alpha - 4$

$4\alpha = -4 \Rightarrow \alpha = -\frac{1}{4} = x \quad y = -\frac{1}{4}$

$\text{مسافة} = \sqrt{(\Delta x)^2 + (\Delta y)^2} = \sqrt{\left(0 + \frac{1}{4}\right)^2 + \left(0 + \frac{1}{4}\right)^2} = \frac{1}{4} \sqrt{2}$



$y - ax = 1 \quad ay - x = a - 1 \quad \text{مستقيمات} = \omega$

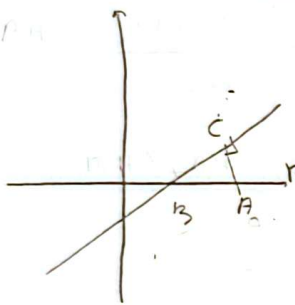
$\frac{1}{a} = \frac{a}{1} \rightarrow a^2 = 1 \Rightarrow a = \pm 1$

$a = 1 \rightarrow y = x + 1, y = x \quad \text{نقطة (1,1) في تقاطع المستقيمان} \Rightarrow y = 1 + 1\sqrt{1}, y = 1\alpha \Rightarrow a = 1$

$a = -1 \rightarrow y = -x + 1, y = -x + 1 \quad (1,0) \Rightarrow y = -1 + 1\alpha, y = -1 + 1\alpha$

$\frac{|C - C'|}{\sqrt{a^2 + b^2}} = \frac{|0 + 1|}{\sqrt{1 + 1}} = \frac{1}{\sqrt{2}} = \frac{\sqrt{2}}{2}$

$\text{مسافة} = \sqrt{(\Delta x)^2 + (\Delta y)^2} \quad \omega = \left(\frac{\sqrt{2}}{2}\right)^2 = \frac{2}{4} = \frac{1}{2} \quad \text{مسافة} = \sqrt{\frac{2}{4}} = \frac{\sqrt{2}}{2} \quad S = \frac{1}{\sqrt{2}} \times \frac{\sqrt{2}}{2} = \frac{1}{2}$



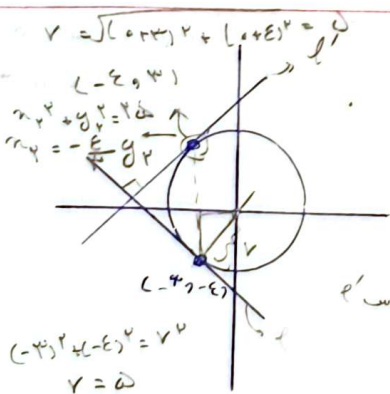
$y = \frac{1}{x} \quad m_{AC} = -3 \Rightarrow y = -3(x - 3) = y = -3x + 10$

نقطة تقاطع خط دالة $\Rightarrow -3x + 10 = \frac{1}{x} \Rightarrow -3x^2 + 10x = 1 \Rightarrow 3x^2 - 10x + 1 = 0 \Rightarrow x = 3, \sqrt{y} = 0.9$
 نقطة تقاطع $\left(\frac{1}{y}, y\right)$ درون مثلث $\Rightarrow$ $\frac{1}{y} = 3, y = 0.9$
 مسافة من C إلى AB $\Rightarrow$ $AB = \sqrt{(0-1)^2 + (1-0)^2} = \sqrt{2}$
 $AC = \sqrt{(0-3)^2 + (1-1)^2} = 3$
 $BC = \sqrt{(1-3)^2 + (0-1)^2} = \sqrt{5}$
 $S = \frac{AB \times BC}{2} = \frac{3 \times \sqrt{5}}{2} = 1.35$

$A(-\frac{1}{4}, a) \quad B(-\frac{1}{4}, b)$

$m_{AB} = \frac{a-b}{-\frac{1}{4} + \frac{1}{4}} = \sqrt{3} \Rightarrow a - b = \frac{\sqrt{3}}{4}$

$AB = \sqrt{(\Delta x)^2 + (\Delta y)^2} = \sqrt{\left(\frac{1}{4} - \frac{1}{4}\right)^2 + \left(\frac{\sqrt{3}}{4}\right)^2} = \frac{\sqrt{3}}{4}$
 $S = \left(\frac{\text{مسافة}}{2}\right)^2 = \frac{3}{16} \Rightarrow \frac{3}{16} = \frac{D^2}{4} \Rightarrow D^2 = \frac{3}{4} \Rightarrow D = \frac{\sqrt{3}}{2}$



$m = \frac{\Delta y}{\Delta x} = \frac{0 + 4}{0 + 2} = \frac{4}{2} = 2$

$m \times m_{\perp} = -1 \Rightarrow m_{\perp} = -\frac{1}{2}$

$m_{\perp} = \frac{4}{2}$

خط دالة: $y + 4 = -\frac{1}{2}(x + 2) \Rightarrow y = -\frac{1}{2}x - \frac{3}{2}$

نقطة تقاطع $\rightarrow \left(-\frac{4}{3}y\right)^2 + y^2 = 1 \Rightarrow y^2 = 9 \Rightarrow y = 3, x = -6$

خط دالة: $y - 3 = \frac{4}{3}(x + 6) \Rightarrow y = \frac{4}{3}x + 10$

نقطة تقاطع $\Rightarrow \frac{4}{3}x - \frac{10}{3} = \frac{4}{3}x + \frac{10}{3} \Rightarrow x = -1, y = 1$

$\frac{4}{3}x = \frac{10}{3} \Rightarrow x = -1, y = 1$

$xy \rightarrow (-1)(1) = -1$