

$$\frac{m-k}{4-(-2)} = \frac{m-k}{4} = -\frac{1}{2} \Rightarrow m = k-3$$

$$AB \text{ فاصله} \rightarrow AB^2 = (4-(-2))^2 + (m-k)^2 = 36 + (-3)^2 = 45$$

$$AB = \sqrt{45} \Rightarrow s = \sqrt{45} \times \sqrt{45} = 45 \quad \checkmark$$

$$-1+x=3-1-x \Rightarrow -2x = -3 \Rightarrow x=1,5$$

$$C(1,5,y), D(-2,5,y+3)$$

$$\vec{AB} = B-A = (4, -3) \text{ و } \vec{BC} = C-B = (-1, 5, y-1)$$

$$\vec{AB} \cdot \vec{BC} = 0 \Rightarrow 4(-1,5) + (-3)(y-1) = 0 \Rightarrow -3y-3=0 \Rightarrow y=-1$$

$$\Rightarrow C(1,5,-1), D(-2,5,2) \Rightarrow BC = \sqrt{(-1,5)^2 + (-2)^2} = 2,5 \quad \checkmark$$

$$P = 2(AB+BC) = 2(5+2,5) = 15 \quad \checkmark$$

$$a = \frac{-2m}{m^2-1} = \tan 60^\circ = \sqrt{3} \Rightarrow \sqrt{3}m^2 + 2m - \sqrt{3} = 0$$

$$m = \frac{-2 \pm \sqrt{4+12}}{2\sqrt{3}} \Rightarrow m_1 = \frac{1}{\sqrt{3}}, m_2 = -\sqrt{3}$$

$$|m_1 - m_2| = \left| \frac{1}{\sqrt{3}} - (-\sqrt{3}) \right| = \frac{1}{\sqrt{3}} + \sqrt{3} = \frac{4}{\sqrt{3}} \Rightarrow \frac{4\sqrt{3}}{3} \quad \checkmark$$

$$m = \frac{11-3}{\sqrt{-3}} = \frac{8}{\sqrt{-3}} = 2$$

$$y-3 = 2(x-3) \Rightarrow y = 2x-3$$

$$A \text{ از } B \text{ فاصله} \rightarrow \frac{|2(1)-9-3|}{\sqrt{5}} = \frac{10}{\sqrt{5}} = 2\sqrt{5} \quad \checkmark$$

$$B \rightarrow y+2x=7 \Rightarrow y=7-2x \Rightarrow 14-4x-7x=-19 \Rightarrow 11x=23 \Rightarrow x=2, y=1$$

$$A \text{ از } B \text{ فاصله} \rightarrow \frac{|14-9-14|}{\sqrt{25}} = \frac{22}{5} = 4,4 \quad \checkmark$$

$$\frac{y}{-4} + \frac{x}{\frac{1}{\sqrt{2}}} = 1 \Rightarrow y = -4 - 1x \xrightarrow{\text{مربع}} x = -4 - 1x \Rightarrow 9x = -4 \Rightarrow x = -\frac{4}{9}$$

$$S = \frac{-\frac{4}{9} \times \frac{1}{\sqrt{2}}}{\frac{1}{\sqrt{2}}} = \frac{4}{9}$$

$$ab = \sqrt{\frac{4 \times 1}{9}} = \frac{2\sqrt{2}}{3} \quad \checkmark$$

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$$m_1 = a, m_2 = \frac{1}{a} \Rightarrow a = \frac{1}{a} \text{ (مضرب 4)} \Rightarrow a^2 = 1 \Rightarrow a = \pm 1$$

$$\left. \begin{aligned} a=1 &\rightarrow y-x=1, y-x=0 \Rightarrow \frac{|c_1-c_2|}{\sqrt{2}} = \frac{1}{\sqrt{2}} \\ a=-1 &\rightarrow y+x=1, y+x=2 \Rightarrow \frac{|c_1-c_2|}{\sqrt{2}} = \frac{1}{\sqrt{2}} \end{aligned} \right\} \textcircled{1}$$

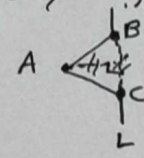
$$\frac{1}{\sqrt{2}} \Rightarrow L^2 = 2\Delta - \frac{1}{2} = \frac{49}{2} \Rightarrow L = \frac{7}{\sqrt{2}} \textcircled{2}$$

$$\textcircled{1} \textcircled{2} \rightarrow S = \frac{7}{\sqrt{2}} \times \frac{1}{\sqrt{2}} = \frac{7}{2} \quad \checkmark$$

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ارتفاع و مساحت مربع را بدین ترتیب می‌توانیم حساب کنیم

$$x+y=1 \rightarrow \text{فاصله از A} \rightarrow \frac{|1(4) + (-3)(0) - 1|}{\sqrt{10}} = \frac{3}{\sqrt{10}} \quad \checkmark$$

$$S = \frac{1}{2} \times \frac{3}{\sqrt{10}} \times \frac{3}{\sqrt{10}} = \frac{9}{20}$$


9/20
A

$$\frac{a-b}{\frac{-1}{2} + \frac{1}{2}} = \sqrt{3} \Rightarrow \frac{-\sqrt{3}}{0} = a-b$$

$$\sqrt{\left(\frac{-\sqrt{3}}{4}\right)^2 + \left(\frac{1}{4}\right)^2} = \sqrt{\frac{3}{16}} = \frac{\sqrt{3}}{4} \Rightarrow S = \frac{\sqrt{3}}{4} \times \frac{\sqrt{3}}{4} = \frac{3}{16}$$

$$ab = \sqrt{2S} \Rightarrow \sqrt{2 \times \frac{3}{16}} = \frac{\sqrt{6}}{4} = \frac{\sqrt{2}}{2} \rightarrow \frac{\sqrt{2}}{2} \quad \checkmark$$

2
9

$$\sqrt{(-3)^2 + (-4)^2} = 5, m_1 = \frac{-4}{-3} = \frac{4}{3} \Rightarrow m_2 = -\frac{3}{4}$$

$$L \text{ bis} \rightarrow y+4 = \frac{3}{4}(x+3) \rightarrow y = \frac{3}{4}x - \frac{5}{4}$$

$$y = \frac{3}{4}x + b \rightarrow 4x - 3y + 3b = 0 \Rightarrow \frac{|3b|}{\sqrt{25}} = \frac{|3b|}{5} \Rightarrow |3b| = 25$$

$$\text{پس فرض کنیم } y = \frac{3}{4}x + \frac{25}{3}$$

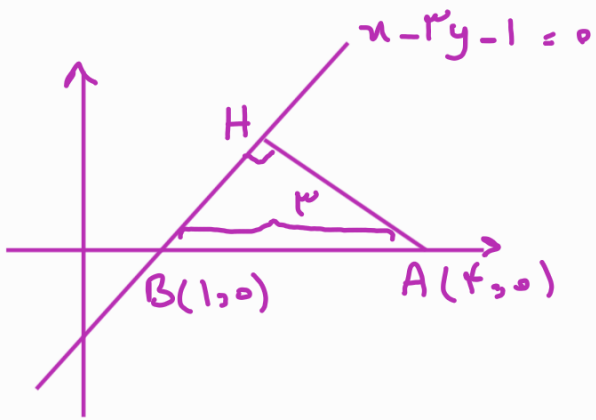
$$\frac{3}{4}x - \frac{5}{4} = \frac{3}{4}x + \frac{25}{3} \Rightarrow y = \frac{3}{4}(-1) + \frac{25}{3} = \frac{-21+25}{3} = \frac{4}{3}$$

$$(-1, -1) \rightarrow x \cdot y = (-1) \cdot (-1) = 1 \quad \checkmark$$

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۱۸ ابتدا شکل سوال را رسم کرده و طول ضلع

AH را می یابیم



$$|AH| = \frac{|4 - 0 - 1|}{\sqrt{9 + 1}} = \frac{3}{\sqrt{10}}$$

$$\frac{9}{10} (\cancel{AH})^2 + (BH)^2 = (\cancel{AB})^2 \rightarrow BH = \frac{9}{\sqrt{10}}$$

$$S_{\Delta} = \frac{9}{\sqrt{10}} \times \frac{3}{\sqrt{10}} \times \frac{1}{2} = \frac{27}{20} = 1,35$$