

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

$$AB = \sqrt{(m-k)^2 + 4^2} = \sqrt{9 + 16} = 5 \Rightarrow S_2(3\sqrt{5}) = (40)$$

$$AB = \sqrt{3^2 + 4^2} = 5 = CD \Rightarrow$$

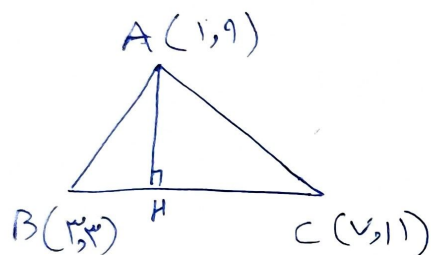
$$\sqrt{(x+1)^2 + (-3)^2} = \sqrt{10} \Rightarrow (x+1)^2 + 9 = 10 \Rightarrow (x+1)^2 = 1 \Rightarrow x+1 = \pm 1 \Rightarrow x = 0 \text{ or } x = -2$$

$$\sqrt{(x-3)^2 + (y-1)^2} = \sqrt{x^2 + (y-1)^2} \Rightarrow \boxed{x = \frac{5}{2}}$$

$$\Rightarrow x_2 < \frac{5}{2} - \frac{5}{2}$$

$$m = \tan 40^\circ = \sqrt{3} \Rightarrow \frac{-2m}{m^2 - 1} = \sqrt{3} \Rightarrow \sqrt{3}m^2 + 2m - \sqrt{3} = 0$$

$$\Rightarrow m^2 + 2m - 3 = 0 \Rightarrow m = \frac{-2 \pm \sqrt{4 + 12}}{2} = \frac{-2 \pm 4}{2} \Rightarrow m = 1 \text{ or } m = -3$$



$$BC: m = \frac{11-5}{5-3} = 3 \Rightarrow m_{AH} = -\frac{1}{3}$$

$$\Rightarrow y = 3x + b \Rightarrow 3 = 9 + b \Rightarrow y = 3x - 6$$

$$y_{AH} = -\frac{x}{3} + b \Rightarrow 9 = -\frac{1}{3} + b \Rightarrow y = -\frac{x}{3} + \frac{28}{3}$$

$$3x - 6 = -\frac{x}{3} + \frac{28}{3} \Rightarrow x = \frac{20}{4} = 5, y = \frac{9}{4}$$

$$\Rightarrow AH = \sqrt{\left(\frac{20}{4}\right)^2 + \left(\frac{9}{4}\right)^2} = \sqrt{\frac{410}{4}}$$

$$A: \frac{5x+14}{4} = 5 - 2x \Rightarrow 18 - 8x = 5x + 14 \Rightarrow 11x = 4 \Rightarrow x = \frac{4}{11}, y = 0 \Rightarrow A(\frac{4}{11}, 0)$$

$$B: 5 - 2x = \frac{5x-19}{4} \Rightarrow 20 - 8x = 5x - 19 \Rightarrow 11x = 39 \Rightarrow x = \frac{39}{11}, y = 1$$

$$C: \frac{5x-19}{4} = \frac{5x+14}{4} \Rightarrow 5x - 19 = 5x + 14 \Rightarrow 11x = 33 \Rightarrow x = 3, y = 1$$

$$y_{AC} = \frac{5}{11}x + b \Rightarrow 0 = \frac{5}{11}x + b \Rightarrow y = \frac{5}{11}x + \frac{14}{11}$$

$$y_{BH} = -\frac{5}{11}x + b \Rightarrow 1 = -\frac{5}{11} + b \Rightarrow y = -\frac{5}{11}x + \frac{16}{11}$$

$$\frac{5}{11}x + \frac{14}{11} = -\frac{5}{11}x + \frac{16}{11} \Rightarrow x = \frac{2}{11}, y = \frac{16}{11}$$

$$\Rightarrow BH = \sqrt{\left(3 - \frac{2}{11}\right)^2 + \left(1 - \frac{16}{11}\right)^2} = \sqrt{\frac{910}{121}} = \frac{\sqrt{910}}{11}$$

$$y = ax + b \rightarrow -1x - 4 \Rightarrow y = -1x - 4$$

$$x = y \Rightarrow x = -1x - 4 \Rightarrow 2x = -4 \Rightarrow x = -2$$

$$\Rightarrow \text{جواب: } \left(-2, \sqrt{2} \right)$$

~~maximize~~ $y - ax = 1$ A

~~minimize~~ $ay - x = a - 1$ B

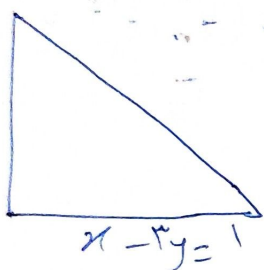


$$m_{AD} = m_{BC} \Rightarrow \frac{a}{1} = \frac{1}{a} \Rightarrow a^2 = 1 \Rightarrow a = \pm 1$$

$$y = ax + 1 \Rightarrow y = x + 1$$

$$y = \frac{x}{a} + \frac{a-1}{a} \Rightarrow y = x \quad DC = \frac{\sqrt{2}}{2} \Rightarrow S = 0.5 \times \frac{\sqrt{2}}{2} \times 2 = \boxed{0.5\sqrt{2}}$$

A(1,0)



$$AC_{\text{dist}} = \frac{|x - 2y - 1|}{\sqrt{1+4}} = \frac{2}{\sqrt{5}}$$

$$m = \frac{b-a}{\frac{1}{a}} = \sqrt{2} \Rightarrow b-a = \frac{\sqrt{2}}{a}$$

$$d = \sqrt{\left(\frac{1}{a}\right)^2 + \left(\frac{\sqrt{2}}{a}\right)^2} \times \sqrt{2} = \sqrt{\frac{1}{a}} \times \sqrt{2} = \boxed{\frac{\sqrt{2}}{a}}$$

$$r_{\text{ش}} = \frac{-f}{-f} = \frac{f}{f} \rightarrow m_L = -\frac{f}{f} \rightarrow y = -\frac{f}{f}x + b \rightarrow -f = \frac{A}{f} + b$$

$$\Rightarrow y = -\frac{f}{f}x - \frac{f}{f}$$

$$m_L' = \frac{f}{f} \rightarrow y = \frac{f}{f}x + b \Rightarrow y = \frac{f}{f}x + \frac{f}{f}$$

$$\frac{|b|}{\sqrt{1+\frac{17}{a}}} = 0 \Rightarrow b = \frac{f}{f}$$

$$\frac{f}{f}x + \frac{f}{f} = -\frac{f}{f}x - \frac{f}{f} \Rightarrow x = -1 \Rightarrow y = -1 \Rightarrow \boxed{V}$$