

$$AB \text{ خط } \rightarrow \frac{1-4}{2-5} = -1$$

$$AB \text{ خط } \rightarrow \left(\frac{2+4}{2}, \frac{-4+1}{2} \right)$$

$$y-1 = \frac{1}{-1} (x-3) \rightarrow y-1 = -1(x-3)$$

AB خط

$$y = x+2$$

۱

$$BC - AH$$

$$\begin{cases} 3y + 4x = 5 \\ 4y - 3x = -5 \end{cases}$$

$$BC - AH \rightarrow \Delta = 2 = 3$$

$$x = \frac{1}{2}, y = -\frac{1}{2}$$

$$A, H \text{ فاصله} = \sqrt{\left(2 + \frac{1}{2}\right)^2 + \left(1 + \frac{1}{2}\right)^2} = \frac{1}{2} = 2$$

۲

$$3x + 4y + 2 = 0 \rightarrow x = 2$$

$$(-x + 2y - 1 = 0) \rightarrow x = 2$$

$$\text{فاصله دو خط} = \frac{|14-2|}{\sqrt{2^2+1^2}}$$

$$\text{نصف دایره} = \frac{3\sqrt{5}}{2}$$

$$\text{مساحت دایره} = 12 \times \frac{4}{2}$$

۳

$$AH - AM \rightarrow (y, x)$$

$$\begin{cases} 3y + 4x = 5 \\ 4y - 3x = -5 \end{cases}$$

$$\frac{1}{2}\sqrt{2} - \sqrt{2} = \frac{\sqrt{2}}{2}$$

$$\begin{cases} y+x=5 \\ y-x=-2 \end{cases} \rightarrow \begin{cases} x = \frac{3}{2} \\ y = \frac{7}{2} \end{cases} \rightarrow H = \left(\frac{3}{2}, \frac{7}{2} \right)$$

۴

$$\frac{m+1}{2m-5} = \frac{5-m}{3m-2} \rightarrow 5m^2 - 13m + 11 = 0$$

$$m = 1, 11$$

۵

$$\begin{cases} AB = x + y = 2 \\ AC = 2y - 3x = -2 \end{cases} \quad A(-\frac{1}{2}, -\frac{5}{3}) \quad B(5, -1) \quad C(\frac{5}{2}, \frac{\sqrt{5}}{2})$$

نقطه A

$$-3x = 1 \quad x = -\frac{1}{3} \quad y = \frac{5}{3}$$

$$AM = \frac{\sqrt{10}}{3}$$

$$AH = \frac{\sqrt{14}}{3}$$

$$\frac{AM}{AH} = \frac{\sqrt{10}}{\sqrt{14}}$$

6

نقطه A

$$y = -x + 5$$

$$B(5, 0)$$

$$C(0, 5)$$

$$AB = \sqrt{(5-0)^2 + (0-5)^2} = \sqrt{50} = 5\sqrt{2}$$

$$AC = \sqrt{(0-0)^2 + (5-5)^2} = 0$$

$$BC = \sqrt{(5-0)^2 + (0-5)^2} = 5\sqrt{2}$$

$$\sqrt{2} = \frac{|C|}{\sqrt{1^2 + 1^2}} = \frac{|C|}{\sqrt{2}} \Rightarrow C = \sqrt{2}$$

7

د خط $y + mx = x + 2$ و $my - 5x = 2m$ تقاطع نقطه $(\frac{m}{m-1}, \frac{2}{m-1})$ است.

نقطه $A(\frac{m}{m-1}, \frac{2}{m-1})$ و $B(1, 2)$ و $C(0, 2)$ است.

$$S = \frac{1}{2} \times \frac{1}{m} \times \frac{2}{m-1} = \frac{1}{m(m-1)}$$

$$\frac{1}{m(m-1)} = \frac{1}{m^2 - m + 2}$$

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

محلول فوق قاصر است.

$$-1 = m$$

8

قوسه نقطه $(2, 2)$ و $(-2, -2)$ است.

$$y = x + 2$$

$$y = -x - 2$$

$$y = 2x - 12$$

9

نقطه $(1, 2)$ و $(-1, 2)$ است.

$$y = -x + 3$$

$$y = x + 5$$

$$y = 2$$

$$x = -1$$

$$2b - a = \frac{1}{12} + 3 = \frac{37}{12}$$

$$\frac{1+a}{r} = -1$$

$$a = -r$$

$$\frac{r+b}{r} = 1$$

$$b = r$$

10