

11, 16

کوتاهترین مسافت

مسافت (د)

مسافت 14

$$m_{AB} = \frac{\Delta y}{\Delta x} = \frac{1-4}{-2} = -\frac{3}{2}$$

$$y = \frac{1}{v}x + \frac{p}{v}$$

①: B(1, 1) و A(4, -4) از روی خط میانی

$$B(1, 1)$$

$$m = \frac{1}{v}$$

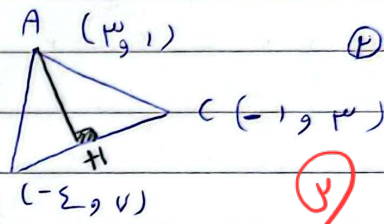
$$y = \frac{1}{v}x + b$$

$$(1, 1) \rightarrow 1 = \frac{1}{v} + b \rightarrow b = \frac{1-v}{v}$$

$$BC = \sqrt{14 + 9} = 5$$

$$m_{BC} = \frac{1}{-2} = -\frac{1}{2}$$

$$y = -\frac{1}{2}x + b$$



$$1 = \frac{1}{-2} + b \rightarrow b = \frac{1}{2}$$

$$BC: 3y + 2x - 5 = 0$$

$$AH \rightarrow \frac{|1 + 1 - 5|}{\sqrt{2 + 14}} = \frac{3}{4} = \frac{3}{4}$$

$$BC - AH = 5 - \frac{3}{4} = \frac{17}{4}$$

$$py - x = v$$

$$py = x + v$$

$$y = \frac{1}{p}x + \frac{v}{p}$$

$$xy = ax + y$$

$$y = \frac{a}{2}x + \frac{1}{2}$$

$$\frac{a}{2} = \frac{1}{2} \rightarrow a = 1$$

$$py - x - v = 0$$

فاصله

$$\frac{|-1 - (-v)|}{\sqrt{1 + p^2}} = \frac{v}{\sqrt{2}} = \frac{\sqrt{2}}{2}$$

$$py - x - v = 0$$

فاصله

$$\sqrt{1 + 2}$$

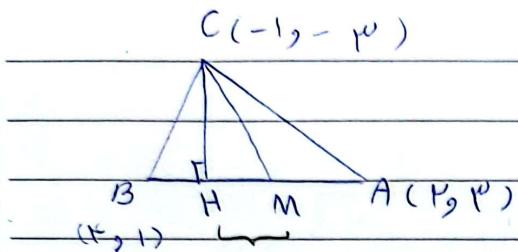
$$S = \pi r^2 = \pi \left(\frac{\sqrt{2}}{2} \right)^2 = \frac{\pi}{2}$$

$$\begin{cases} py - x = v \\ py - ax = v \end{cases} \rightarrow a = p$$

$$d = \frac{4}{\sqrt{2}}$$

$$\text{شعاع} = \frac{1}{\sqrt{2}}$$

$$S = \pi \times \frac{1}{2} = \frac{\pi}{2}$$



$$MH = \sqrt{\left(\frac{1}{r}\right)^2 + \left(\frac{1}{r}\right)^2} = \sqrt{\frac{1}{r}}$$

$$M = AB \text{ midpoint} = (1, 1)$$

$$AB \Rightarrow y = -x + 2 \quad y + x - 2 = 0$$

$$m \perp CH = 1 \quad CH: y = x - 1$$

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

$$y = \frac{3}{2} \quad H\left(\frac{3}{2}, \frac{3}{2}\right)$$

$$\begin{cases} (1-m-r)x + (2-m)y - 1 = 0 \\ (m+1)x - (1-m-r)y + 1 = 0 \end{cases}$$

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

$$m^2 - 13m + 9 = 0 \quad \Delta < 0 \quad m \text{ ليس حقيقي}$$

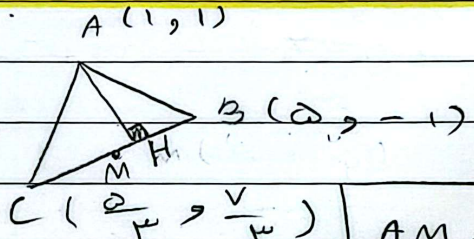
$$\begin{cases} AB: y = -\frac{1}{r}x + \frac{1}{r} \\ AC: y = rx - 1 \\ BC: y = -x + 2 \end{cases}$$

$$A: -\frac{1}{r}x + \frac{1}{r} = rx - 1 \rightarrow A(1, 1)$$

$$B: -\frac{1}{r}x + \frac{1}{r} = -x + 2 \rightarrow B(2, -1)$$

$$C: rx - 1 = -x + 2 \rightarrow C\left(\frac{3}{r}, \frac{1}{r}\right)$$

$$BC \text{ midpoint} = \left(\frac{1}{r}, \frac{1}{r}\right)$$



$$AM = \sqrt{\left(\frac{1}{r}\right)^2 + \left(\frac{1}{r}\right)^2} = \frac{\sqrt{2}}{r}$$

$$AH = \sqrt{1+1} = \sqrt{2}$$

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

s.a.m

$$y = -\frac{1}{r}x + b \rightarrow 2y + x - rb = 0$$

(9) (✓)

$$|b| = \frac{|rb|}{\sqrt{r^2+1}} = \frac{|rb|}{\sqrt{2}} = r\sqrt{2} \quad |b| = a$$

$$y = -\frac{1}{r}x \pm a \rightarrow \text{مركز دایره} = 1, 0 \quad \begin{cases} A(1, 0) \\ B(0, a) \end{cases}$$

$$AB = \sqrt{1^2 + a^2} = \sqrt{1 + a^2} = a\sqrt{2}$$

$$\begin{cases} y = (1-m)x + r = 0 \rightarrow x = \frac{r}{m-1} \\ y = \frac{r}{m}x + r = 0 \rightarrow x = -\frac{m}{r} \end{cases} \quad \text{فاصله بین دو نقطه} = \text{اصلی}$$

(1, 20)

$$(1-m)x + r = \frac{r}{m}x + r \rightarrow x = 0 \quad y = r \quad (\log r)$$

$$\frac{1}{r} \times \text{اصلی} \times r = \frac{a}{r} \quad \text{اصلی} = \frac{a}{r} \quad \frac{r}{m-1} + \frac{m}{r} = \frac{r + m^2 - m}{r(m-1)}$$

$$\frac{m^2 - m + r}{r(m-1)} = \frac{a}{r} \quad m^2 - m + r = am - a \rightarrow m = \frac{r}{a}$$

$$\begin{aligned} x \rightarrow r(r) - x &= \varepsilon - x & PM(r, -r) \text{ نسبت به } y &= rx - r \\ y \rightarrow r(-r) - y &= -r - y & -r - y &= r(r - x) - \bar{r} \\ & & -\varepsilon - y &= a - rx \end{aligned}$$

$$y = rx - a$$

s.a.m

$$y - a - a = 0$$

$$y = x + a = AA' \text{ (inverse)} \rightarrow m AA' = -1$$

$$A(1, r) \rightarrow A'(a, b) \quad \frac{b-r}{a-1} = -1 \quad b-r = 1-a \quad b = r-a \quad \textcircled{1}$$

$$|r - a| = |b - a - a| \quad |b - a - a| = r$$

$$\sqrt{1-1} \quad \sqrt{1+1}$$

$$\begin{cases} b-a-a = r \rightarrow b = a+a = r-a \rightarrow \begin{matrix} a = -r \\ b = r \end{matrix} \quad \textcircled{1} \\ b-a-a = -r \rightarrow b = a+1 = r-a \rightarrow \begin{matrix} a = 1 \\ b = r \end{matrix} \quad \textcircled{2} \end{cases}$$

$$\textcircled{1} \quad r-b-a = r+r = \textcircled{1:2} / \textcircled{2} \quad r-b-a = r-1 = \textcircled{r}$$

$$S_D = \left| \frac{m^r - m + r}{r(m-1)} \right| \left| \frac{r^r - 1}{r} - \frac{a}{r} \right| \quad (1)$$

$$\rightarrow m = r, \quad m^r + r_{m-1} = 0$$

$$\downarrow$$

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

$$r_{x-1} = -r$$

s.a.m