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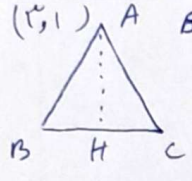
$$A(1, -4) \rightarrow M_{AB} = \frac{1 - (-4)}{1 - 1} = \frac{14}{-2} = -7 \quad M' = \frac{1}{7}$$

$$B(1, 1) \rightarrow y - 1 = \frac{1}{7}(x - 1)$$

مختصات مرکز دایره $\rightarrow x = \frac{1 - 4}{2} = -1.5 \quad y = \frac{1 + 1}{2} = 1 \quad A'(-1.5, 1)$

مساحت دایره $\rightarrow r = \frac{1 - 4}{2} = -1.5 \quad n = \frac{1 + 1}{2} = 1 \quad A'(-1.5, 1) \Rightarrow y = \frac{1}{7}x + \frac{1}{7}$

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$A(1, 1) \quad B(-1, 1) \quad C(-1, 3) \Rightarrow M_{BC} = \frac{1 - 1}{-1 - 1} = \frac{0}{-2} = 0 \quad C(-1, 3) \Rightarrow y - 3 = \frac{0}{-2}(x + 1) \Rightarrow y = 3$

$y = \frac{0}{-2}x + \frac{3}{-2} = -\frac{3}{2}x + \frac{3}{2}$

$y + \frac{3}{2}x - \frac{3}{2} = 0 \Rightarrow 2y + 3x - 3 = 0$

$A(1, 1) \Rightarrow 2(1) + 3(1) - 3 = 2 \neq 0$

$d_{AH} = 1 \quad BC = \sqrt{(1 - (-1))^2 + (1 - 3)^2} = \sqrt{4 + 4} = \sqrt{8} = 2\sqrt{2}$

$BC - AH = 2\sqrt{2} - 1$

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فاصله دو خط موازی $\leftarrow$ مقدار دایره

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

$$2y - x = 5 \Rightarrow 4y - 2x = 10$$

$$d = \frac{|10 - 2|}{\sqrt{4 + 1}} = \frac{8}{\sqrt{5}}$$

$r = \frac{4}{\sqrt{5}} \times \frac{1}{2} = \frac{2}{\sqrt{5}} = \frac{2\sqrt{5}}{5}$

$S = \pi r^2 = \pi \left(\frac{2\sqrt{5}}{5}\right)^2 = \frac{4}{5}\pi$

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$M \rightarrow \left(\frac{x_A + x_B}{2}, \frac{y_A + y_B}{2}\right) \Rightarrow \left(\frac{1 + 1}{2}, \frac{-4 + 1}{2}\right) \Rightarrow M(1, -1.5)$

مساحت دایره $\rightarrow$ مساحت دایره

$AB: M_{AB} = \frac{1 - 1}{1 - 1} = \frac{0}{0} = -1 \quad y - 1 = -1(x - 1) \Rightarrow y = -x + 2$

$CH: M_{CH} = \frac{1}{2} \quad y - (-1) = 1(x - (-1)) \Rightarrow y = x - 1$

$x - 1 = -x + 2 \Rightarrow 2x = 3 \Rightarrow x = \frac{3}{2} \quad y = \frac{3}{2} - 1 = \frac{1}{2} \quad H\left(\frac{3}{2}, \frac{1}{2}\right)$

$MH = \sqrt{\left(\frac{3}{2} - 1\right)^2 + \left(\frac{1}{2} - (-1.5)\right)^2} = \sqrt{\frac{1}{4} + \frac{16}{4}} = \sqrt{\frac{17}{4}} = \frac{\sqrt{17}}{2}$

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$C \Rightarrow y = 2x - 1, y = -x + 1 \quad -x + 1 = 2x - 1 \Rightarrow x = \frac{2}{3} \quad C\left(\frac{2}{3}, \frac{1}{3}\right)$

$A: AC, AB \text{ تلاقی: } -\frac{2}{3} + \frac{1}{3} = 2x - 1 \Rightarrow A(1, 1)$

$B: BC, AB \text{ تلاقی: } x + 2y = 1 \quad x + y = 1 \quad -2y + 1 = -y + 1 \Rightarrow y = 0 \quad B(1, 0)$

$AM \rightarrow M \rightarrow \left(\frac{1 + \frac{2}{3}}{2}, \frac{1 + \frac{1}{3}}{2}\right) = \left(\frac{5}{6}, \frac{2}{3}\right) \quad AM = \sqrt{\left(1 - \frac{5}{6}\right)^2 + \left(1 - \frac{2}{3}\right)^2} = \sqrt{\frac{1}{36} + \frac{1}{9}} = \sqrt{\frac{5}{36}} = \frac{\sqrt{5}}{6}$

$AH \rightarrow$ فاصله نقطه از خط $\frac{|ax + by + c|}{\sqrt{a^2 + b^2}} = \frac{|1 + 1 - 1|}{\sqrt{1 + 1}} = \frac{1}{\sqrt{2}} = \frac{\sqrt{2}}{2}$

$x + y - 1 \quad / \quad (1, 1)$

$\frac{AH}{AM} = \frac{\frac{\sqrt{2}}{2}}{\frac{\sqrt{5}}{6}} = \frac{3\sqrt{2}}{\sqrt{5}}$

$$1 = \frac{y}{b} + \frac{z}{a} \quad m = \frac{-1}{r} = \frac{-b}{a} \quad b = \frac{a}{r} \quad (1) \quad |B(.,b), A(a,.)|$$

$$\Rightarrow 1 = \frac{ay + bn}{ab} \Rightarrow ay + bn - ab = 0 \quad \text{مساحت} = \frac{|c|}{\sqrt{a^2+b^2}} = \frac{|ab|}{\sqrt{a^2+b^2}} = \frac{r}{2}$$

$$\xrightarrow{\text{①}} \frac{|a \cdot \frac{a}{r}|}{\sqrt{a^2 + \frac{a^2}{r^2}}} = \frac{\frac{a^2}{r}}{\frac{a\sqrt{50}}{r}} = \sqrt{r} \Rightarrow \frac{a}{\sqrt{50}} = \sqrt{r} \Rightarrow a = 10, b = a$$

$$B = (0, a), A(1, 0) \Rightarrow AB = \sqrt{10^2 + 0^2} = \sqrt{100} = 10$$

$$my = rx + rm \quad y = \frac{r}{m}x + r \quad \text{مضلع متساوي الساقين} \rightarrow$$

$$y = -mx + n + r \quad y = (1-m)x + r \quad (0, r)$$


$$S = \frac{1}{r} \times r \times |nr - n_1|$$

$$\frac{\delta}{r} = |nr - n_1| \quad nr \Rightarrow \frac{r}{m}x + r = 0 \Rightarrow x = -r \Rightarrow n = \frac{-m}{r}$$

$$n_1 \Rightarrow 0 = r + (1-m)n \Rightarrow n = \frac{-r}{-m+1} = \frac{r}{m-1}$$

$$\frac{\delta}{r} = \left| \frac{-m}{r} - \frac{r}{m-1} \right|, \quad \frac{\delta}{r} = \frac{-m}{r} - \frac{r}{m-1} \Rightarrow \frac{\delta}{r} = \frac{-m^2 + m - r}{rm - r}$$

$$1 - \frac{\delta}{r} = \frac{-m}{r} - \frac{r}{m-1} \Rightarrow \frac{-\delta}{r} = \frac{-m^2 + m - r}{rm - r}$$

$$\delta m - \delta = -m^2 + m - r \Rightarrow m^2 + rm - 1 = 0 \rightarrow \delta = -1$$

$$-\delta m + \delta = -m^2 + m - r \Rightarrow m^2 - 9m + 9 = 0 \quad (m-4)^2 = 0 \quad m = 4$$

$$S_{\text{مربع}} = 4 \times -1 = -4$$

$$M(r, r) \text{ نقطة تقاطع } A' \leftarrow A(1, -1) \quad 9$$

$$x_m = \frac{x_A + x_{A'}}{r} \Rightarrow r = \frac{1 + x_{A'}}{r} \Rightarrow x_{A'} = r$$

$$y_m = \frac{y_A + y_{A'}}{r} \Rightarrow -r = \frac{-1 + y_{A'}}{r} \Rightarrow y_{A'} = -r \quad A'(r, -r)$$

$$y = rx - 9 \quad y + r = r(x - r) \quad \left. \begin{array}{l} r = \text{خط} \\ \text{نقطة مرور (نقطة)} \end{array} \right\} (r, -r)$$

$$A(1, r) \leftarrow B \dots A' \quad d \text{ خط}$$

$$y = x + a \quad A' \Rightarrow x_{A'} = rx_B - x_A = -r - 1 = -r$$

$$y = -x + r \quad y_{A'} = ry_B - y_A = 1 - r = 4 \quad A'(-r, 4)$$

$$B(-1, r) \quad n = -1 \quad a = -r, b = 4$$

$$B: \text{خط} : -x + r = x + a \Rightarrow rx = -r \quad r \times 4 - (-r) = 10$$

$$(m+1)x - (r_m - r)y + 1 \leq 0 \Rightarrow m_1 \leq \frac{-a}{b} = \frac{m+1}{r_m - r} \quad - \text{و د ب}$$

$$(r_m + r)x + (\delta - m)y - V \leq 0 \Rightarrow m_2 = \frac{r - r_m}{\delta - m}$$

$$m_1 \cdot m_2 \leq -1 \Rightarrow m_1 \leq \frac{-1}{m_2} \Rightarrow \frac{m+1}{r_m - r} \leq \frac{-m + \delta}{r - r_m} = -1$$

$$\Rightarrow r_m r + m - r \leq -r_m r + 1 r_m + r$$

$$\Rightarrow \delta m^r - 1 r_m + 1 \Delta \leq 0 \Rightarrow \Delta \{ \quad \text{برای هیچ مقدار از } m$$