

B, A, C نقطة $M = (3, 1)$, $m = \frac{1+4}{-2} = -\frac{5}{2} \rightarrow m' = \frac{1}{5}$ ①
 ليم عدد بـ AB

$\rightarrow y = ax + b \xrightarrow{\substack{(3,1) \\ a = \frac{1}{5}}} 1 = \frac{3}{5} + b \rightarrow \frac{2}{5} = b \rightarrow y = \frac{x}{5} + \frac{2}{5}$

$BC = \sqrt{(y_0 - y_c)^2 + (x_0 - x_c)^2} \rightarrow BC = \sqrt{9 + 14} = 5$ ②

$m_{BC} = \frac{4-3}{-2+1} = \frac{-1}{-1} = 1 \rightarrow y = ax + b \rightarrow 3 = \frac{1}{1} + b \rightarrow 2 = b$

$\rightarrow y = \frac{x}{1} + \frac{2}{1} \rightarrow 3y + 2x - 2 = 0 \rightarrow AH = \frac{|am_1 + by_1 + c|}{\sqrt{a^2 + b^2}} \rightarrow$
 (نقطة A نقطة BC)

$\rightarrow AH = \frac{|1 \cdot 3 + 2 \cdot 1 - 2|}{\sqrt{1^2 + 2^2}} = \frac{1}{\sqrt{5}} \rightarrow BC - AH = 3$

علاقة $\rightarrow m = m' \rightarrow \begin{cases} ky - ax - 2 = 0 \\ ky - 1x - 1 = 0 \end{cases} \rightarrow a = 2$ ③

المسافة $s = \frac{|c - c'|}{\sqrt{a^2 + b^2}} \rightarrow d = \frac{|-2 + 11|}{\sqrt{14 + 1}} = \frac{9}{\sqrt{15}} = 3\sqrt{3}$



$r = \frac{4}{2\sqrt{3}} = \frac{2\sqrt{3}}{3} \rightarrow S = \pi r^2 \Rightarrow S = \frac{4\pi}{3}$

B, A, C نقطة $M \rightarrow m = (3, 2)$ ④

$m_{AB} = \frac{2}{-1} = -2 \rightarrow m_{AC} = 1 \xrightarrow{(-1, -3)} -3 = -1 + b \rightarrow b = -2 \rightarrow y = x - 2$

$y - x + 2 = 0$

$\rightarrow d = \frac{|am_1 + by_1 + c|}{\sqrt{a^2 + b^2}} \xrightarrow{(3,2)} d = \frac{|1 - 3 + 2 + 2|}{\sqrt{1 + 1}} = \frac{2}{\sqrt{2}} = \sqrt{2}$

$$(a-m)y \leq \sqrt{-(m-1)}x \rightarrow a = \frac{-m+1}{a-m} \quad (2)$$

$$-(m-1)y \leq -(m+1)m-1 \rightarrow a = \frac{m+1}{m-1} \rightarrow a = -\frac{1}{a} \rightarrow$$

$$\frac{-m+1}{a-m} \leq \frac{m-1}{-m-1} \rightarrow -m^2-m+1 = +m^2-1m+1 \rightarrow$$

$$am^2-1m+1 \leq 0 \rightarrow \Delta < 0 \rightarrow m = \emptyset$$

برای هیچ مقدار m این دو خط بر هم نمی‌خورند.

$$A \rightarrow \begin{matrix} AB \\ AC \end{matrix} \rightarrow \begin{cases} x+2y=1 \\ 2y-m=-1 \end{cases} \rightarrow \begin{matrix} x \leq 1 \\ y \leq 1 \end{matrix} \rightarrow A = (1,1) \quad (4)$$

$$B \rightarrow \begin{matrix} BC \\ AB \end{matrix} \rightarrow \begin{cases} x+2y \leq 1 \\ x+y \leq 1 \end{cases} \rightarrow y \leq 1, x \leq 1 \rightarrow B = (1,-1)$$

$$C \rightarrow \begin{matrix} BC \\ AC \end{matrix} \rightarrow \begin{cases} y-2m \leq 1 \\ x+y=1 \end{cases} \rightarrow -m \leq 1 \rightarrow m \leq \frac{a}{2} \rightarrow y \leq \frac{V}{2}$$

$$C = \left(\frac{a}{2}, \frac{V}{2} \right)$$

$$M = \left(\frac{1}{2}, \frac{1}{2} \right) \rightarrow AM = \sqrt{\frac{1+1}{2}} = \frac{\sqrt{2}}{2}$$

$$AH = \frac{|1+1-1|}{\sqrt{1+1}} = \frac{1}{\sqrt{2}} \rightarrow \frac{AM}{AH} = \frac{a}{2}$$

$$d = \sqrt{2} \rightarrow \sqrt{2} \leq \frac{|am+by+c|}{\sqrt{a^2+b^2}} \rightarrow \sqrt{2} \leq \frac{|c|}{\frac{\sqrt{2}}{2}} \rightarrow (0,0) \quad (5)$$

$$y \leq ax+b \rightarrow y + \frac{1}{2}x + c \leq 0 \rightarrow |c| \leq \frac{\sqrt{1+1/4}}{2} = \frac{\sqrt{5}}{4}$$

$$c \leq \pm \frac{\sqrt{5}}{4}$$

$$0 = -\frac{1}{2}x - a \rightarrow x \leq -2a$$

$$0 \leq -\frac{1}{2}x + a \rightarrow x \leq 2a$$

$$AB = \sqrt{1+1/4} = \frac{\sqrt{5}}{2}$$



