

$$\text{شیب} = \frac{\Delta y}{\Delta x} = \frac{1 - (-2)}{2 - 4} = \frac{14}{-2} = -7$$

شیب عکس و عکس شیب $\Rightarrow \frac{1}{-7}$ ، سطح موازی $(\frac{2}{7}, \frac{1}{7} + 1)$

$$y = \frac{1}{-7}x + b \Rightarrow 1 = \frac{1}{-7} \times 2 + b \Rightarrow b = \frac{9}{7}$$

$$\Rightarrow y = \frac{1}{-7}x + \frac{9}{7}$$

$$BC = \sqrt{(y_2 - y_1)^2 + (x_2 - x_1)^2} = \sqrt{(1 - 2)^2 + (-4 - (-1))^2} = \sqrt{1 + 9} = \sqrt{10} = 0$$

$$\text{شیب} = \frac{1 - 2}{-4 - (-1)} = -\frac{1}{3}$$

معادله خط BC: $y = -\frac{1}{3}x + \frac{5}{3}$

$$d = \frac{|ax_0 + by_0 + c|}{\sqrt{a^2 + b^2}} = \frac{|\frac{1}{3} \times 3 + 1 - \frac{5}{3}|}{\sqrt{\frac{1}{9} + \frac{1}{9}}} = \frac{|\frac{1}{3} - \frac{5}{3}|}{\frac{2}{3}} = \frac{1}{2}$$

$$2y - x = 7 \Rightarrow 4y - 2x = 14$$

$$4y - 2x = 14 \Rightarrow x = 2$$

$$d = \frac{|C - C'|}{\sqrt{a^2 + b^2}} = \frac{|14 - 2|}{\sqrt{4^2 + (-2)^2}} = \frac{12}{\sqrt{20}} = \frac{6\sqrt{5}}{5}$$

$$S_0 = \pi r^2 = \pi \times (\frac{6\sqrt{5}}{5})^2 = \frac{36 \times 5}{5} \pi = 36\pi$$

$$\pi = 3 \rightarrow \frac{36}{3} = 12$$

شیب خط $M(\frac{2+4}{2}, \frac{3+1}{2}) \Rightarrow M(3, 2)$

CH: $y = x - 2$

MH: $\frac{|1 - 2 + 2|}{\sqrt{1^2 + 1^2}} = \frac{1}{\sqrt{2}}$

$$\text{شیب} = \frac{2 - 4}{3 - 1} = -1 \Rightarrow y = -x + b \Rightarrow 2 = -3 + b \Rightarrow b = 5$$

$$d = \frac{|1 - 1 - 5|}{\sqrt{2}} = \frac{5}{\sqrt{2}} = \frac{5\sqrt{2}}{2}$$

$$C, M = \sqrt{(y_2 - y_1)^2 + (x_2 - x_1)^2} = \sqrt{(2 + 1)^2 + (3 + 1)^2} = \sqrt{10} = \sqrt{10}$$

$$= \sqrt{(1.5\sqrt{2})^2 + (1)^2} = (\sqrt{10})^2 \Rightarrow 4.5 + 1 = 5.5 \Rightarrow 11 = 10 \Rightarrow n = 0.1$$

$$\text{شیب خط ۲} = -\frac{2m - 2}{5 - m}$$

$$\frac{m+1}{2m-4} \times (-\frac{2m-2}{5-m}) = -1 \Rightarrow \frac{(m+1)(2m-2)}{(2m-4)(5-m)} = 1 \Rightarrow (m+1)(2m-2) = (2m-4)(5-m)$$

$$2m^2 + m - 2 = 2m^2 + 10m - 20 \Rightarrow 3m^2 + 2m^2 + m - 10m - 2 + 20 = 0$$

$$5m^2 - 9m + 18 = 0 \Rightarrow \Delta = (-9)^2 - 4(5)(18) = 81 - 360 = -279$$

$\Delta < 0 \Rightarrow$ به ازای هیچ عددی از m برقرار نیست

$$\begin{cases} y = -\frac{x}{r} + \frac{r}{r} \\ y = -x + r \end{cases} \Rightarrow B(0, -1)$$

$$\begin{cases} y = \frac{x}{r} + \frac{r}{r} \\ y = x + 1 \end{cases} \Rightarrow A(1, 1)$$

$$\begin{cases} y = x - 1 \\ y = x - 1 \end{cases} \Rightarrow C(\frac{0}{r}, \frac{r}{r})$$

$$M = (\frac{\frac{0}{r} + \frac{10}{r}}{r}, \frac{-\frac{r}{r} + \frac{r}{r}}{r}) = M(\frac{10}{r^2}, \frac{0}{r})$$

$$AM = \sqrt{(\frac{r}{r})^2 + (\frac{1}{r})^2} = \frac{\sqrt{5}}{r}$$

$$A \log B = \frac{|1+1-1|}{\sqrt{r}} = \frac{1}{\sqrt{r}} = AH$$

$$AM \log B \Rightarrow a = -1 \quad b = r \Rightarrow x + y = r$$

$$\frac{x}{a} + \frac{y}{b} = 1 \quad \text{نسبة} \quad \frac{1}{a} = \frac{1}{r} \Rightarrow \frac{b}{a} = \frac{1}{r} \Rightarrow b = \frac{a}{r}$$

$$bx + ay = ab \quad \Delta = |ax_0 + bx_0 + ab| \quad \Delta = \sqrt{r}$$

$$b = \frac{a}{r} \quad ab = a \times \frac{a}{r} = \frac{a^2}{r} \Rightarrow \sqrt{a^2 + \frac{a^2}{r}} = \sqrt{\frac{8a^2}{r}} = \frac{a\sqrt{8}}{r}$$

$$\Delta = \frac{a}{\sqrt{5}} = \frac{a}{\sqrt{5}} = \sqrt{r} \Rightarrow a = \sqrt{r} \times \sqrt{5} = \sqrt{5r} = 10 \quad b = \frac{a}{r} = 2$$

$$A(a, 0) = (10, 0) \quad B(0, b) = (0, 2) \quad AB = \sqrt{(10-0)^2 + (0-2)^2} = \sqrt{104}$$

$$\begin{cases} my - \frac{r}{m} = r \Rightarrow y = \frac{r}{m}x + r \\ y + mx = x + r \Rightarrow y = -mx + x + r \end{cases} \Rightarrow \frac{r}{m} + r = -m + 1 + r \Rightarrow \frac{r}{m} + r = -m + 1 + r$$

$$\Rightarrow \frac{r}{m} + r = -m + 1 + r$$

$$\Delta = \frac{0}{r} \quad 0 = \frac{r}{m}x + r \Rightarrow x_A = -\frac{m}{r}$$

$$C = (0, 2) \Rightarrow \text{نقطة التقاطع} \quad y = 0$$

$$0 = (1-m)x + r \Rightarrow x_B = -\frac{r}{1-m}$$

$$\textcircled{1} -\frac{r}{m} - m = \frac{0}{r} \Rightarrow -m^2 + 2m - 9 = 0 \Rightarrow m^2 - 2m + 9 = 0 \Rightarrow m = 3$$

$$\textcircled{2} -\frac{r}{m} - m = -\frac{0}{r} \Rightarrow -m^2 - 2m + 1 = 0 \Rightarrow m = -1 \pm \sqrt{5}$$

$$x = 0 \quad y = 2(0) = -2$$

$$\text{نسبة} \quad (2, -2) \quad \text{نقطة التقاطع}$$

$$\begin{cases} x' = 2(1) - 0 = 2 \\ y' = 2(-2) - (-2) = -2 \end{cases} \quad (2, -2)$$

$$y + 1 = 2(x - 1) \Rightarrow y + 1 = 2x - 2 \Rightarrow y = 2x - 3$$

$$y - x - 0 = 0$$

$$a = 1 \quad \frac{1}{a} = 1$$

$$y - 2 = -1(x - 1) \Rightarrow y = -x + 2$$

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

$$y = x + 0 \Rightarrow y = 0$$

$$A'(-1, 2, 1)$$

$$2b - a = 2(2) - (-1) = 5$$