

۲۰

B II ۱, ۲, ۳, ۴, ۵, ۶, ۷, ۸, ۹, ۱۰, ۱۱, ۱۲, ۱۳, ۱۴, ۱۵, ۱۶, ۱۷, ۱۸, ۱۹, ۲۰

$$\left. \begin{array}{l} A(-r, K) \\ B(r, m) \end{array} \right\} \rightarrow x - \frac{1}{r}x + b = y \Rightarrow \frac{-1}{r}(-r) + b = K \rightarrow b + 1 = K \rightarrow b = K - 1 \quad (1)$$

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

$$\Rightarrow K - 1 = m + 1 \rightarrow K - m = 2$$

$$AB = \sqrt{\Delta x^2 + \Delta y^2} = \sqrt{r^2 + 9}$$

$$S = a^2 = \sqrt{r^2 + 9}^2 = r^2 + 9$$

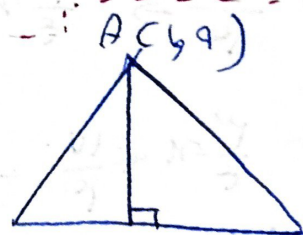
$$rmn + (m^2 - 1)y = r \Rightarrow (m^2 - 1)y = -rmn + r$$

$$y = \frac{-rm}{m^2 - 1} \Rightarrow \frac{-rm}{m^2 - 1} = \sqrt{r} \rightarrow -rm = \sqrt{r} m^2 - \sqrt{r}$$

$$\Rightarrow \sqrt{r} m^2 + rm - \sqrt{r} = 0 \quad \Delta = r + 12 = 19 \quad m = \frac{-r \pm \sqrt{r^2 + 12}}{2\sqrt{r}}$$

$$= \frac{r}{\sqrt{r}} \pm \frac{-r}{\sqrt{r}} = \frac{\sqrt{r}}{r} \text{ و } -\sqrt{r} \rightarrow \frac{\sqrt{r}}{r} - (-\sqrt{r})$$

$$= \frac{\sqrt{r}}{r} + \sqrt{r} = \frac{r\sqrt{r}}{r}$$



B(3, 3)

C(9, 11)

$$BC \Rightarrow m = \frac{\Delta y}{\Delta x} = \frac{1}{r} = r \rightarrow rn + b = y \xrightarrow{BC(r, r)} r + b = r \rightarrow b = -r$$

$$\Rightarrow BC = rn - r$$

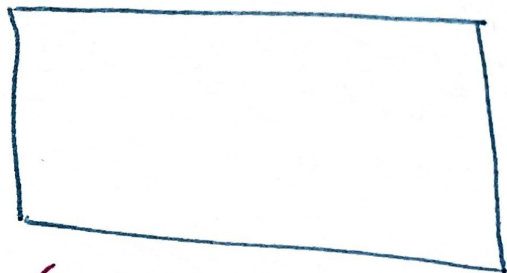
$$y - rx + r = 0$$

$$AH = \frac{|A \text{ to } BC|}{BC} \Rightarrow d = \frac{|9 - r + r|}{\sqrt{r^2 + 1}} = \frac{10}{\sqrt{r^2 + 1}} = 2\sqrt{5}$$

$$A(-1, 4)$$

5

$$B(3, 1)$$



$$\frac{5}{2}$$

① مجموع طول نقاط A و C با B و D برابر
و مجموع عرض نقاط A و C با B و D برابر است.

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

②

$$D(-1-m, y+3)$$

$$C(m, y)$$

$$D(-\frac{5}{2}, y+3)$$

$$\frac{1}{2}$$

$$C(\frac{3}{2}, y)$$

$$-1$$

$$AB \Rightarrow \frac{\Delta y}{\Delta x} = \frac{3}{-4} = -\frac{3}{4}$$

$$AD \perp AB \rightarrow AD \Rightarrow \frac{3}{2}x + b \xrightarrow{A(-1, 4)} -\frac{4}{3}x + b = 4$$

$$\Rightarrow b = 4 + \frac{4}{3} = \frac{16}{3} \rightarrow AD = \frac{3}{2}x + \frac{16}{3}$$

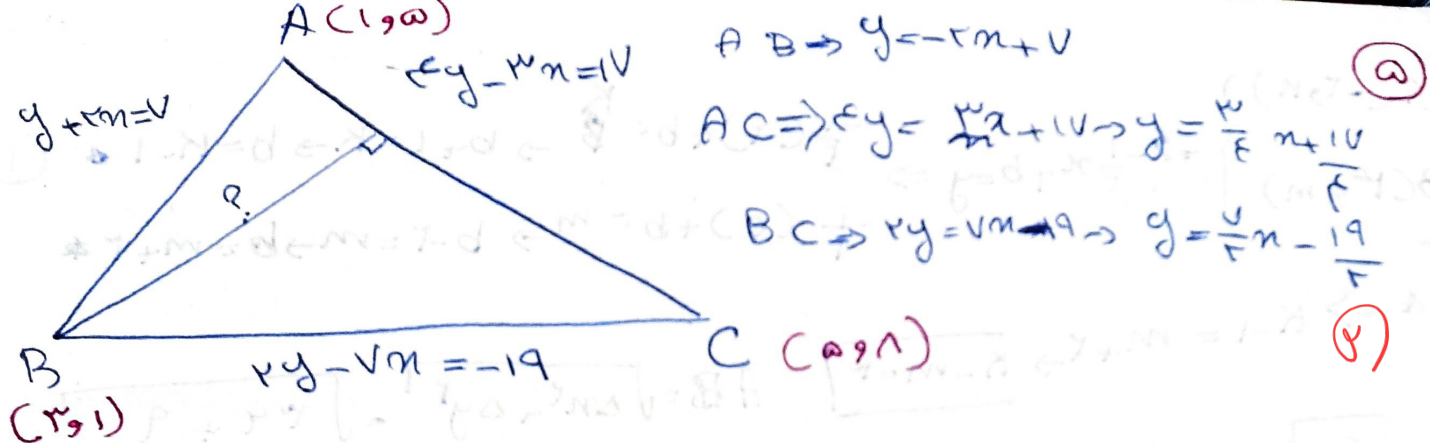
$$\frac{3}{2}x - \frac{5}{2} + \frac{16}{3} = \frac{4}{3} \Rightarrow x = -\frac{5}{2}$$

$$\Rightarrow y + 3 = 2 \rightarrow y = -1$$

$$BC \Rightarrow \sqrt{(3 - \frac{3}{2})^2 + (1 - (-1))^2} = \sqrt{\frac{9}{4} + 4} = \sqrt{\frac{25}{4}} = \frac{5}{2}$$

$$AB \Rightarrow \sqrt{4 + 16} = \sqrt{20} = 2\sqrt{5}$$

$$2P = 2(\frac{5}{2} + \frac{5}{2}) = 10 + 5 = 15$$



$$A \Rightarrow BA = AC \Rightarrow -2x + 7 = 2x + 1 \Rightarrow (2 + 2)x = 7 - 1 \Rightarrow 4x = 6 \Rightarrow x = \frac{3}{2}$$

$$\frac{11}{x} x = \frac{11}{x} \Rightarrow x = 1 \quad y = -2(1) + 7 = 5$$

$$B \Rightarrow AB = BC \Rightarrow -2x + 7 = 1 \Rightarrow -2x = 1 - 7 \Rightarrow -2x = -6 \Rightarrow x = 3$$

$$\Rightarrow \frac{11}{x} x = \frac{11}{x} \Rightarrow x = 3 \Rightarrow y = -2(3) + 7 = 1$$

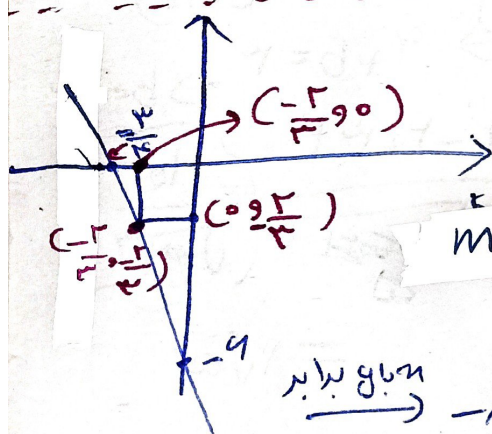
$$C \Rightarrow AC = BC \Rightarrow 2x + 1 = 1 \Rightarrow 2x = 0 \Rightarrow x = 0$$

$$\frac{11}{x} x = \frac{11}{x} \Rightarrow x = 0 \Rightarrow y = 2(0) + 1 = 1$$

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

$$\Rightarrow AC = \frac{2}{x} x + \frac{x - 2}{x} \Rightarrow \frac{2x + x - 2}{x} = \frac{3x - 2}{x} = \frac{22}{5} \Rightarrow 3x - 2 = \frac{22x}{5} \Rightarrow 15x - 10 = 22x \Rightarrow -7x = -10 \Rightarrow x = \frac{10}{7}$$

$$\Rightarrow 2y - 3x - 10 = 0 \Rightarrow (3, 1)$$



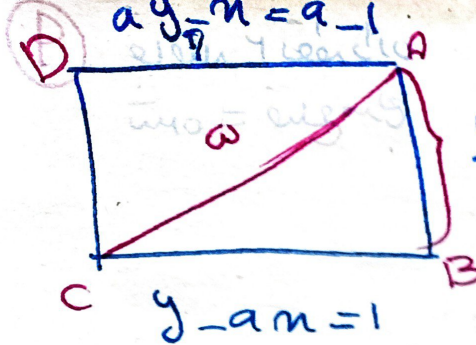
$$m = \frac{-4}{3} = -\frac{4}{3}$$

$$y = -1x + b \Rightarrow y = -1x - 4$$

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

$$\frac{+2}{x} \sqrt{21} = \text{فاصله}$$

۶) فاصله بین دو خط موازی برابر است با فاصله از هر یک از خطوط موازی تا خط وسط.
 به عبارتی دیگر فاصله از هر یک از خطوط موازی تا خط وسط.



$$ay = x + (a-1) \rightarrow y_1 = \left(\frac{1}{a}\right)x + \frac{a-1}{a} \quad \checkmark$$

$$\frac{\sqrt{2}}{2} y - ax = 1 \rightarrow y_2 = ax + 1$$

خطوط موازی به نسبت برابر

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

$$a - \frac{1}{a} \neq 1 \rightarrow a - 1 \neq a \rightarrow \checkmark$$

نقطه (۱، ۲) باید در هر دو خط باشد
مصدق کند

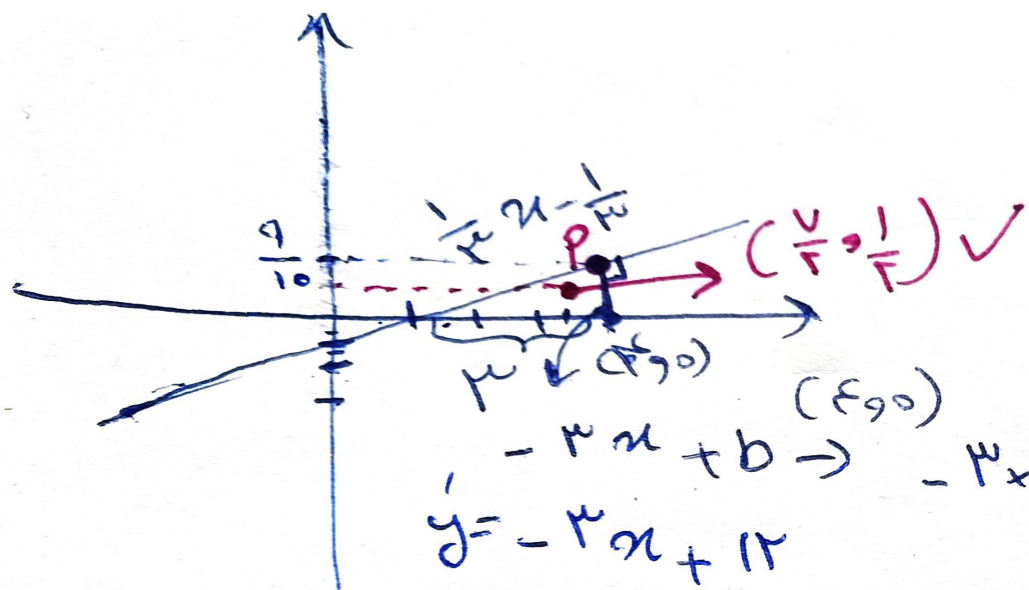
if $a = 1$ $\begin{cases} y_1 = x \rightarrow (1, 2) \times \\ y_2 = x + 1 \rightarrow (1, 2) \checkmark \end{cases} \Rightarrow a = 1 \checkmark$

if $a = -1$ $\begin{cases} y_1 = -x + 2 \rightarrow (1, 2) \times \\ y_2 = -x + 1 \rightarrow (1, 2) \times \end{cases}$

$AB \rightarrow$ فاصله بین دو خط $\rightarrow \frac{|1 - 0|}{\sqrt{1 + 1}} = \frac{1}{\sqrt{2}} = \frac{\sqrt{2}}{2}$

$$BC^2 = AC^2 - AB^2 = 2\omega - \frac{1}{2} = \frac{4\omega - 1}{2}$$

$$\Rightarrow BC = \frac{\sqrt{4\omega - 1}}{\sqrt{2}} \rightarrow S_{ABCD} = AB \cdot BC = \frac{\sqrt{2}}{2} \times \frac{\sqrt{4\omega - 1}}{\sqrt{2}} = \frac{\sqrt{4\omega - 1}}{2} = \boxed{\frac{\sqrt{4\omega - 1}}{2}}$$



$$ky = x - 1 \rightarrow y = \frac{1}{k}x - \frac{1}{k} = 0$$

$$\frac{1}{k}x = \frac{1}{k} \rightarrow x = 1$$

$$P \Rightarrow -kx + 12 = \frac{1}{k}x - \frac{1}{k} \rightarrow (k + \frac{1}{k})x = 12 + \frac{1}{k}$$

$$\frac{10}{k}x = \frac{kv}{k} \Rightarrow x = \frac{kv}{10} = k_v \quad y = -kx + 12$$

$$= -k + k_v + 12 = -11 + 12 = 0,9$$

$$S = \frac{9}{10} \times k \times \frac{1}{k} = \frac{kv}{10}$$

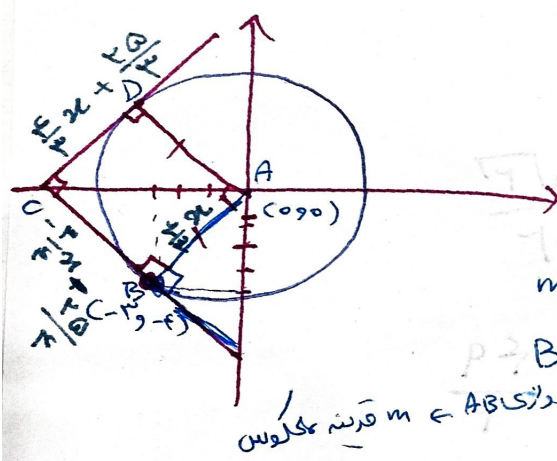
$\Delta = \sqrt{3}x + C$
 $\begin{cases} \xrightarrow{(-\frac{1}{\sqrt{3}}, a)} \sqrt{3}(-\frac{1}{\sqrt{3}}) + C = a \\ \xrightarrow{(-\frac{1}{\sqrt{3}}, b)} \sqrt{3}(-\frac{1}{\sqrt{3}}) + C = b \end{cases}$

۹) فاصله نقطه داره
 شش = ضلع مربع

$\Rightarrow \begin{cases} \rightarrow -\frac{\sqrt{3}}{2} + C = a \rightarrow C = a + \frac{\sqrt{3}}{2} \\ \rightarrow -\frac{\sqrt{3}}{2} + C = b \rightarrow C = b + \frac{\sqrt{3}}{2} \end{cases} \rightarrow a + \frac{\sqrt{3}}{2} = b + \frac{\sqrt{3}}{2} \rightarrow b - a = \frac{\sqrt{3}}{2}$

$d = \sqrt{\left(-\frac{1}{\sqrt{3}} - (-\frac{1}{\sqrt{3}})\right)^2 + \left(\frac{\sqrt{3}}{2}\right)^2} = \sqrt{\frac{1}{3} + \frac{3}{4}} = \sqrt{\frac{4}{12} + \frac{9}{12}} = \sqrt{\frac{13}{12}} = \frac{\sqrt{13}}{2\sqrt{3}} = \frac{\sqrt{39}}{6}$

$\frac{1}{\sqrt{3}} \times \sqrt{3} = \frac{\sqrt{3}}{\sqrt{3}} = 1$ $\leftarrow$ قطر مربع $\leftarrow a\sqrt{3} =$ قطر مربع



$\sqrt{9+14} = \omega$ $\rightarrow$ انزازه هر عرض دایره
 $m_{AB} = \frac{1}{\sqrt{3}} \rightarrow AB = \frac{1}{\sqrt{3}}x + b = \frac{1}{\sqrt{3}}x$

$BC = -\frac{1}{\sqrt{3}}x + b \xrightarrow{C(3, -4)} -\frac{1}{\sqrt{3}}(3) + b = -4 \rightarrow b = -4 + \frac{3}{\sqrt{3}} = -4 + \sqrt{3}$

* فاصله نقطه B از خط CD = ضلع مربع = ω

$CD = \frac{1}{\sqrt{3}}x + b = y \rightarrow 3y = x + 3b \rightarrow -x + 3y - 3b = 0 \rightarrow C(-3b, 1)$

$d = \frac{|ax_0 + by_0 + c|}{\sqrt{a^2 + b^2}} = \frac{|1(-3b) - 1(1) - 3b|}{\sqrt{1+9}} = \omega \rightarrow |-4b - 1| = 3\omega$

$\Rightarrow \begin{cases} -4b = -3\omega - 1 \rightarrow b = \frac{3\omega + 1}{4} \\ -4b = 3\omega - 1 \rightarrow b = \frac{1 - 3\omega}{4} \end{cases}$

$\frac{1}{\sqrt{3}}x + \frac{1 - 3\omega}{4} = -\frac{1}{\sqrt{3}}x - \frac{3\omega + 1}{4} \rightarrow \left(\frac{1}{\sqrt{3}} + \frac{1}{\sqrt{3}}\right)x = -\left(\frac{3\omega + 1}{4} + \frac{3\omega + 1}{4}\right)$

$\frac{2}{\sqrt{3}}x = -\frac{3\omega + 1}{2} \rightarrow 2\omega x = -(3\omega + 1) \rightarrow x = -\frac{3\omega + 1}{2\omega}$

$y = \frac{1}{\sqrt{3}}x + \frac{1 - 3\omega}{4} \xrightarrow{x = -\frac{3\omega + 1}{2\omega}} \frac{1}{\sqrt{3}}\left(-\frac{3\omega + 1}{2\omega}\right) + \frac{1 - 3\omega}{4} = -\frac{1}{\sqrt{3}} - \frac{3\omega}{4} + \frac{1 - 3\omega}{4} = -\frac{1}{\sqrt{3}} - \frac{3\omega}{2}$

$x + y = -\frac{3\omega + 1}{2\omega} - \frac{1}{\sqrt{3}} - \frac{3\omega}{2} = -1$