

$y - y_0 = m(x - x_0)$

۱۹، ۲۵
 شیب m د یک نقطه از آن (x_0, y_0)
 معادله خط نوشتن با داشتن
 شیب m و یک نقطه از آن (x_0, y_0)
 سوال (۱۵)

الف) $B \mid -2$ $m = \frac{\Delta y}{\Delta x} = \frac{5 - (-2)}{4 - 0} = -\frac{7}{4}$ $(y - 2) = -\frac{7}{4}(x - 4)$
 $y - 2 = -\frac{7}{4}x + 7 \Rightarrow y = -\frac{7}{4}x + 9$ ✓

ب) $2y + 6x = -1 \Rightarrow y + 3x = -\frac{1}{2} \Rightarrow y = -3x - \frac{1}{2}$ $m = -3$ ✓

$x=2, y=5 \Rightarrow y - 5 = -3(x - 2) \Rightarrow y - 5 = -3x + 6 \Rightarrow y = -3x + 11$ ✓

ج) $x + 3y = 1 \Rightarrow y = -\frac{x}{3} + \frac{1}{3} \Rightarrow m = -\frac{1}{3}$ ✓

$x=2, y=5 \Rightarrow y - 5 = -\frac{1}{3}(x - 2) \Rightarrow y - 5 = -\frac{1}{3}x + \frac{2}{3} \Rightarrow y = -\frac{1}{3}x + \frac{17}{3}$ ✓

د) $m = \tan \frac{\pi}{4} = 1$ $y - 2 = 1(x - 4) \Rightarrow y - 2 = x - 4 \Rightarrow y = x - 2$ ✓

الف) $A \mid \frac{2}{3}$ $B \mid -1$ $d = \sqrt{5y^2 + 8x^2} = \sqrt{(5-3)^2 + (-1-2)^2} = \sqrt{4 + 9} = \sqrt{13}$ ✓

ب) $3x + 4y = 3$
 $d = \frac{|ax_0 + by_0 + c|}{\sqrt{a^2 + b^2}} = \frac{|3(2) + 4(3) - 3|}{\sqrt{9 + 16}} = \frac{|6 + 12 - 3|}{5} = \frac{15}{5} = 3$ ✓
 $ax + by = \frac{|C - C'|}{r}$

الف) $2x + 3y = 6$
 $(8x + 4y = 1) \times \frac{1}{4} = 2x + y = \frac{1}{4} \Rightarrow 2x + 3y = \frac{1}{4} + \frac{3}{4} = 1$ ✓

ب) $\frac{|C - C'|}{\sqrt{a^2 + b^2}} \Rightarrow \frac{|4 - 4|}{\sqrt{3^2 + 2^2}} = \frac{0}{\sqrt{13}} = 0$ ✓

$3x - 2y = 1$
 $2x + 3y = 3$
 $\frac{|ax + by + c|}{\sqrt{a^2 + b^2}} = \frac{|a'x + b'y + c'|}{\sqrt{a'^2 + b'^2}}$
 $\Rightarrow \frac{|3x - 2y - 1|}{\sqrt{9 + 4}} = \frac{|2x + 3y - 3|}{\sqrt{4 + 9}}$

$\Rightarrow \begin{cases} 3x - 2y - 1 = 2x + 3y - 3 & x - 5y + 2 = 0 \\ 3x - 2y - 1 = -(2x + 3y - 3) & 5x + y - 4 = 0 \end{cases}$ ✓

$$A) \begin{vmatrix} 1 & 1 \\ 1 & 1 \end{vmatrix} \quad B) \begin{vmatrix} 1 & -1 \\ 1 & 1 \end{vmatrix}$$

(2) (5 د)

$$d = \sqrt{5y^2 + 4x^2} = \sqrt{(5(-1))^2 + (4(-1))^2} = \sqrt{25 + 16} = \sqrt{41} = 10 \checkmark$$

$$B) \quad \begin{cases} x_M = \frac{x_A + x_B}{2} = \frac{-2 + 1}{2} = \frac{-1}{2} = -1 \\ y_M = \frac{y_A + y_B}{2} = \frac{-1 + 1}{2} = \frac{0}{2} = 0 \end{cases} \Rightarrow M(-1, 0) \checkmark$$

$$الف) \quad \begin{cases} x_M = \frac{x_1 + x_2 + x_3}{3} = \frac{1 + (-1) + (-1)}{3} = \frac{-1}{3} = -1 \\ y_M = \frac{y_1 + y_2 + y_3}{3} = \frac{-1 + 1 + 1}{3} = \frac{1}{3} = 1 \end{cases} \Rightarrow M(-1, 1) \checkmark$$

$$B) \quad \begin{vmatrix} 1 & -1 & -1 \\ 1 & 1 & -1 \\ 1 & 1 & 1 \end{vmatrix} = (-1)(1) + (-1)(1) + (-1)(1) = -1 - 1 - 1 = -3 \Rightarrow S = \frac{|-3|}{1} = 3 \checkmark$$

$$الف) \quad y = \frac{1}{x-1} \Rightarrow -y = \frac{1}{1-x} \Rightarrow y = -\frac{1}{x-1} \checkmark \quad y = \frac{1}{x-1} \quad (1 \text{ د})$$

$$B) \quad y = \frac{1(-x)+1}{1(-x)-1} \Rightarrow y = \frac{-x+1}{-x-1} \checkmark$$

$$ج) \quad x = \frac{1}{y-1} \Rightarrow y = -\frac{1}{x-1} = \frac{1}{1-x} \checkmark$$

$$D) \quad y = \frac{1}{x-1} \Rightarrow -y = \frac{1}{1-x} \Rightarrow y = -\frac{1}{x-1} \quad \text{دقت!} \quad y = \frac{1}{x-1} \quad (9 \text{ د})$$

$$\begin{aligned} الف) \quad & \begin{cases} \alpha' = \alpha + 1 \Rightarrow \alpha = \alpha' - 1 \\ \beta' = \beta - (-1) \Rightarrow \beta = \beta' - 1 \end{cases} \\ & \beta' - 1 = \frac{1(\alpha' - 1) + 1}{(\alpha' - 1) - 1} = \frac{\alpha' - 1 + 1}{\alpha' - 2} = \frac{\alpha'}{\alpha' - 2} \Rightarrow \beta = \frac{\alpha'}{\alpha' - 2} \\ & y = \frac{1}{x-1} \end{aligned}$$

$$\begin{aligned} \alpha' &= \alpha - 3 \Rightarrow \alpha = \alpha' + 3 \\ \beta' &= \beta - 2 \Rightarrow \beta = \beta' + 2 \end{aligned}$$

$$y = \frac{2n+1}{n-3}$$

بصورت سوال
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$$\beta' + 2 = \frac{2(\alpha' + 3) + 1}{(\alpha' + 3) - 3} = \frac{2\alpha' + 7}{\alpha' + 1} \Rightarrow \beta' = \frac{2\alpha' + 7 - 2\alpha' - 2}{\alpha' + 1 - 1} = \frac{5}{\alpha'}$$

$$y = \frac{5}{n}$$

$$\begin{aligned} \text{و ۱)} \quad \begin{cases} 3x + 5y = 2 \\ x - 5y = 1 \end{cases} & \xrightarrow{\times(-5)} \begin{cases} 3x + 5y = 2 \\ -x + 25y = -5 \end{cases} \\ & \quad \quad \quad \oplus \quad \quad \quad \hline & \quad \quad \quad 14y = -3 \end{aligned}$$

سوال ۱)

$$14y = -3 \Rightarrow y = \frac{-3}{14}$$

(۲)

$$x = 1 + 5\left(\frac{-3}{14}\right) = \frac{14 - 15}{14} = \frac{-1}{14}$$

$$\begin{cases} 3x + 5y = 2 \\ x - 5y = 1 \end{cases}$$

$$x = - \frac{\begin{vmatrix} 3 & 2 \\ -5 & 1 \end{vmatrix}}{\begin{vmatrix} 3 & 5 \\ 1 & -5 \end{vmatrix}} = - \frac{3(-10)}{-15-5} = - \frac{30}{-20} = \frac{3}{2}$$

$$y = \frac{\begin{vmatrix} 3 & 2 \\ 1 & 1 \end{vmatrix}}{\begin{vmatrix} 3 & 5 \\ 1 & -5 \end{vmatrix}} = \frac{3-2}{-15-5} = \frac{1}{-20} = -\frac{1}{20}$$