

$$\text{الف) } a = \frac{y_1 - y_2}{x_1 - x_2} = \frac{4 - 0}{2 - (-2)} = \frac{-1}{4} \quad y = -\frac{x}{4} + b \rightarrow$$

$$2 = -\frac{1}{4} + b \Rightarrow b = \frac{9}{4} \Rightarrow y = -\frac{x}{4} + \frac{9}{4}$$

$$\text{ب) } 2y + 4x = -1 \rightarrow 2y = -4x - 1 \rightarrow y = -2x - \frac{1}{2}$$

$$\Rightarrow \text{if } \begin{cases} x = 2 = -12 - b \\ \Rightarrow b = -14 \end{cases} \Rightarrow y = -2x - 14$$

$$\text{ج) } x + 2y = 1 \rightarrow 2y = -x + 1 \rightarrow y = -\frac{x}{2} + \frac{1}{2} \rightarrow a = \frac{1}{2}$$

$$y = 2x + b \xrightarrow{\frac{1}{2}} 2 = 12 + b \rightarrow b = -10 \Rightarrow y = 2x - 10$$

$$\text{د) } \frac{\pi}{3} = 60 \Rightarrow \tan 60 = \sqrt{3} \Rightarrow a = \sqrt{3} \rightarrow y = \sqrt{3}x + b$$

$$\hookrightarrow 2 = 4\sqrt{3} + b \Rightarrow b = 2 - 4\sqrt{3} \Rightarrow y = \sqrt{3}x + 2 - 4\sqrt{3}$$

$$\text{الف) } d = \sqrt{(2 - (-1))^2 + (2 - 4)^2} = \sqrt{9 + 16} = 5 \quad (2)$$

$$\text{ب) } d = \frac{|2(2) + 4(2) - 2|}{\sqrt{9 + 16}} = \frac{18}{5} = 3.6$$

$$\text{الف) } \begin{matrix} 2x + 3y = 4 \\ 2x + 3y = 6 \end{matrix} \Rightarrow 2x + 3y = 5 \Rightarrow y = -\frac{2}{3}x + \frac{5}{3} \quad (3)$$

$$\text{د) } \frac{|C' - C|}{\sqrt{a^2 + b^2}} = \frac{|4 - 6|}{\sqrt{4 + 9}} = \frac{2}{\sqrt{13}}$$

$$\frac{|3x - 2y - 1|}{\sqrt{13}} = \frac{|3y + 2x - 3|}{\sqrt{13}} \Rightarrow 3x - 2y - 1 = 3y + 2x - 3$$

$$x + 2 = 5y \rightarrow y = \frac{x+2}{5}$$

$$\rightarrow 3x - 2y - 1 = -3y - 2x + 3 \rightarrow y = -5x + 4$$

$$\begin{aligned} y &= -5x + 4 \\ y &= 2x + 5 \end{aligned} \Rightarrow \tan \theta = \left| \frac{m - m'}{1 + mm'} \right| = \left| \frac{-5}{1 + (-10)} \right| = \left| \frac{-5}{-9} \right| = \frac{5}{9} = \tan \theta \Rightarrow \theta = \tan^{-1} \left(\frac{5}{9} \right)$$

الف) $A \begin{vmatrix} 3 \\ -2 \end{vmatrix} \quad B \begin{vmatrix} -5 \\ 2 \end{vmatrix}$

$$d = \sqrt{(3 - (-5))^2 + (-2 - 2)^2} = \sqrt{64 + 16} = 10$$

$$\begin{aligned} \text{ب) } x' &= \frac{x_1 + x_2}{2} & y' &= \frac{y_1 + y_2}{2} \\ \hookrightarrow \frac{3 - 5}{2} &= (-1) & \hookrightarrow \frac{-2 + 2}{2} &= (0) \end{aligned} \Rightarrow C \begin{vmatrix} -1 \\ 0 \end{vmatrix} \rightarrow C = (-1, 0)$$

الف) مركزه $x' = \frac{x_1 + x_2 + x_3}{3}$

$$y' = \frac{y_1 + y_2 + y_3}{3}$$

$$\hookrightarrow \frac{-10 - 2 + 3}{3} = (-3)$$

$$\frac{-13 + 3 + 1}{3} = (-3) \Rightarrow \underline{\underline{\begin{vmatrix} -3 \\ -3 \end{vmatrix}}}$$

$$\begin{aligned} \text{ب) } \begin{vmatrix} -10 & -2 & 3 \\ 1 & 1 & 1 \\ -13 & 3 & 1 \end{vmatrix} &= -10 + 29 + 9 - (-39) - (-2) - (-20) = 98 \\ S &= \frac{1}{2} \times 98 = \underline{\underline{49}} \end{aligned}$$

$$(1) \quad \text{الف) } x \text{ را مرتبه/کنیم} \rightarrow -y = \frac{2x+1}{4x-3} \rightarrow y = \frac{2x+1}{3+4x}$$

$$\text{ب) } x \text{ را مرتبه/کنیم} \rightarrow y = \frac{1-2x}{-3-4x}$$

$$\text{ج) } x \text{ را عوض کنیم} \rightarrow x = \frac{2y+1}{4y+3} = 2y+1 = 4xy-3x \Rightarrow y(4x-4x) = -3x-1$$

$$\text{د) } y \text{ را عوض در مرتبه/کنیم} \rightarrow y = \frac{-3x-1}{1-4x}$$

$$\rightarrow -x = \frac{-2y+1}{-4y-3} \Rightarrow y(4x+3) = -3x+1 \rightarrow y = \frac{-3x+1}{4x+3}$$

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

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$$x' = x+2$$

$$y' = y-2$$

$$\text{الف) } y-2 = \frac{2(x+2)+1}{x+2-3} \rightarrow y-2 = \frac{2x+5}{x-1} \rightarrow y = \frac{2x+5}{x-1} \rightarrow y = \frac{2x+5}{x-1}$$

$$\text{ب) } y+2 = \frac{2(x+2)+1}{x+2-3} = y+2 = \frac{2x+5+1}{x} \rightarrow y = \frac{2x+6}{x} \Rightarrow y = \frac{2}{x}$$

$$x' = x+2$$

$$y' = y+2$$

$$\begin{cases} 3x + 4y = 2 \\ x - 10y = 1 \end{cases}$$

الف) $\begin{cases} 3x + 4y = 2 \\ -3x + 10y = -3 \end{cases}$

$$14y = -1 \rightarrow y = \underline{\underline{-\frac{1}{14}}}$$

$$x = \frac{14}{19}$$

ب)

~~$$\begin{cases} 3x + 4y = 2 \\ x - 10y = 1 \end{cases}$$~~

$$x = -\frac{4 + 10}{-10 - 4}$$

$$\rightarrow \underline{\underline{\frac{14}{19}}}$$

~~$$\begin{cases} 3x + 4y = 2 \\ x - 10y = 1 \end{cases}$$~~

$$y = \frac{2 - 2}{-10 - 4}$$

$$\rightarrow \underline{\underline{-\frac{1}{14}}}$$