

الف) $m = \frac{-2-2}{2-4} = -4$ $y = -4x + b$ $\frac{1}{2}$ $b = 1 \Rightarrow y = -4x + 1$ (1)

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

ج) $y = -\frac{1}{3}x + \frac{1}{3}$ $m' = 3$ $y = 3x + b$ $\frac{1}{2}$ $b = -1 \Rightarrow y = 3x - 1$

د) $m = \tan \alpha \rightarrow \tan \alpha = \sqrt{3}$ $y = \sqrt{3}x + b$ $\frac{1}{2}$ $b = 2 - \sqrt{3} \Rightarrow y = \sqrt{3}x + 2 - \sqrt{3}$

الف) $\sqrt{(7-3)^2 + (-1-2)^2} = 5$

ب) $\frac{|(3)(2) + (4)(3) - 2|}{\sqrt{9+16}} = \frac{18}{5} = 3.6$ (2)

الف) $\begin{cases} 2x + 3y = 6 \\ 2x + 3y = 4 \end{cases}$ $\frac{4-6}{2} = -1 \rightarrow 2x + 3y = 4$ (3)

ب) $\frac{|4-6|}{\sqrt{4+9}} = \frac{2}{\sqrt{13}}$

$\frac{|3x - 2y - 1|}{\sqrt{9+4}} = \frac{|2x + 3y - 3|}{\sqrt{13}}$ $\Rightarrow 3x - 2y - 1 = \pm (2x + 3y - 3)$ (4)

$\begin{cases} x - 5y + 2 = 0 \\ 5x + 2y - 1 = 0 \end{cases}$

$\tan \alpha = \left| \frac{m - m'}{1 + mm'} \right|$ $y = -3x + 3$ $y = 2x + 5$ $\frac{|-3-2|}{|1+6|} = \frac{5}{7} = 1 \rightarrow \alpha = 45^\circ$ $\alpha = 225^\circ$ (5)

الف) $\sqrt{(-2-4)^2 + (3-5)^2} = 10$ ب) $\left(\frac{x_1 + x_2}{2}, \frac{y_1 + y_2}{2} \right) = \left(\frac{-2+3}{2}, \frac{4-2}{2} \right) = \left(\frac{1}{2}, 1 \right)$ (6)

الف) $\frac{2-2-1}{3} = -\frac{1}{3}$ $\rightarrow (-3, 3)$ ب) $\frac{1}{2} \begin{vmatrix} 3 & 1 & 1 \\ -2 & 3 & 1 \\ -10 & -13 & 1 \end{vmatrix} = \frac{1}{2} (96) = 48$ (7)

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

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

-1

$$\text{ج) } x = \frac{2y+1}{5y-3} \rightarrow y = -\left(\frac{-2x-1}{5x-3}\right) \Rightarrow y = \frac{2x+1}{5x-3}$$

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

$$\text{الف) } x' = x-2 \rightarrow x = x'+2$$

$$y' = y+3 \rightarrow y = y'-3$$

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

-4

$$\rightarrow y' = \frac{2x'+5}{x'-1}$$

$$\text{ب) } x' = x-3 \rightarrow x = x'+3$$

$$y' = y-2 \rightarrow y = y'+2$$

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

$$y' = \frac{2x'+7-2x'}{x'} = \frac{7}{x'}$$

$$\text{الف) } \begin{cases} 2x+5y=2 \\ -3x+12y=-3 \end{cases}$$

$$19y = -1$$

$$y = \frac{-1}{19} \Rightarrow x = \frac{19}{19}$$

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

-10

$$x = -\frac{5 \cdot 10}{-10-5} = \frac{10}{19} \quad y = \frac{3-2}{-10-5} = \frac{-1}{19}$$