

۱۹, ۵

الف) $m = \frac{y_2 - y_1}{x_2 - x_1} = \frac{-2 - 1}{5 - 4} = -3 \Rightarrow y - y_1 = m(x - x_1) \Rightarrow y - 1 = -3(x - 5)$

$y = -3x + 16$ ب) $2y + 4x = -1 \rightarrow 2y = -4x - 1 \Rightarrow y = -2x - \frac{1}{2}$

مختصات: $y - y_1 = m(x - x_1) \rightarrow y - 2 = -3(x - 4) \Rightarrow y = -3x + 14$

ج) $3y = -x + 1 \Rightarrow y = -\frac{1}{3}x + \frac{1}{3} \Rightarrow m' = 3 \Rightarrow y - 2 = 3(x - 4) \Rightarrow y = 3x - 10$

الف) $\sqrt{(\Delta y)^2 + (\Delta x)^2} \Rightarrow$

$\sqrt{(2+1)^2 + (3-7)^2} = \sqrt{9+16} = 5$

ب) $\frac{|ax+by+c|}{\sqrt{a^2+b^2}} \Rightarrow$

$\frac{9+12-3}{\sqrt{9+16}} = \frac{18}{5} = 3.6$

الف) استارایب: $\frac{1}{a} = \frac{1}{b}$

$8x + 6y = 18 \Rightarrow 4x + 3y = 9$
 $8x + 6y = 12 \Rightarrow 4x + 3y = 6$

$2x + 3y = 5 \Rightarrow 4x + 6y = 10$

ب) $\frac{|c-c'|}{\sqrt{a^2+b^2}}$
 $4x + 3y - 6 = 0$
 $2x + 3y - 4 = 0$

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

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

$3x-2y-1 = 2x+3y-3 \Rightarrow x-5y = -2$

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

$y = -\frac{3}{5}x + \frac{3}{5}$
 $y = \frac{2}{5}x + \frac{4}{5}$
 $\tan \alpha = \left| \frac{m-m'}{1+mm'} \right| = \left| \frac{\frac{3}{5} + \frac{2}{5}}{1 - \frac{6}{25}} \right| = 1 \Rightarrow \alpha = 45^\circ$

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

الف) $\sqrt{\Delta y^2 + \Delta x^2} \Rightarrow$

$\sqrt{(3+5)^2 + (-2-4)^2} = \sqrt{48+36} = 10$

ب) $B \begin{vmatrix} -5 & 3 \\ \epsilon & -2 \end{vmatrix} A \begin{vmatrix} 3 & 2 \\ -2 & -1 \end{vmatrix}$

$M \begin{vmatrix} \frac{-5+3}{2} \\ \frac{\epsilon-2}{2} \end{vmatrix} \Rightarrow M \begin{vmatrix} -1 \\ 1 \end{vmatrix}$

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الف) $\begin{vmatrix} -10 & -2 & 3 \\ -13 & 3 & 1 \end{vmatrix}$

$x = \frac{\sum x}{3} = \frac{-10-2+3}{3} = -3$

$y = \frac{\sum y}{3} = \frac{-13+3+1}{3} = -3$

ب) $\begin{vmatrix} -10 & -2 & 3 \\ -13 & 3 & 1 \end{vmatrix}$

$\frac{1}{2} \times \begin{vmatrix} -10 & -2 & 3 \\ -13 & 3 & 1 \end{vmatrix} = \frac{1}{2} \times 96 = 48$

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الف) $-y = \frac{2x+1}{\epsilon x-3} \Rightarrow$

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

ب) $y = \frac{-2x+1}{-\epsilon x-3}$

ج) $x = \frac{2y+1}{\epsilon y-3}$

د) $-x = \frac{-2y+1}{-\epsilon y-3} \Rightarrow$

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الف) $x' = x-2 \Rightarrow x = x'+2$

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

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

ب) $x' = x-3 \Rightarrow x = x'+3$
 $y' = y-2 \Rightarrow y = y'+2$

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

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

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الف) $\begin{cases} 3x+4y=2 \\ (x-5y=1) \times -3 \\ -2x+10y=-3 \end{cases}$

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

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

ب) $\begin{cases} 3x+4y=2 \\ x-5y=1 \end{cases}$

$x = \frac{\begin{vmatrix} 2 & 4 \\ 1 & -5 \end{vmatrix}}{\begin{vmatrix} 3 & 4 \\ 1 & -5 \end{vmatrix}} = \frac{14}{19}$
 $y = \frac{\begin{vmatrix} 3 & 2 \\ 1 & -5 \end{vmatrix}}{\begin{vmatrix} 3 & 4 \\ 1 & -5 \end{vmatrix}} = -\frac{1}{19}$

(1, 2)