

الف) $m = \frac{2+2}{2-0} = -4 \Rightarrow y = ax+b \rightarrow b=11 \Rightarrow y = -4x+11$

ب) $m = -\frac{a}{b} = -\frac{4}{1} = -4 \Rightarrow y = ax+b \rightarrow b=11 \Rightarrow y = -4x+11$

ج) $m = -\frac{a}{b} = -\frac{1}{3} \Rightarrow y = ax+b \rightarrow b=10 \Rightarrow y = \frac{1}{3}x-10$

د) $\tan \frac{\pi}{3} = \sqrt{3} = m \Rightarrow y = ax+b \rightarrow b = 2-4\sqrt{3} \Rightarrow y = \sqrt{3}x + 2-4\sqrt{3}$

الف) $\sqrt{(2-(-1))^2 + (3-2)^2} = 5$ ب) $d = \frac{|ax+by+c|}{\sqrt{a^2+b^2}} = \frac{|4+12-31|}{\sqrt{9+16}} = \frac{15}{5} = 3$

الف) $\begin{cases} 2x+4y=1 \\ 2x+3y=9 \end{cases} \xrightarrow{\text{مضروب}} \begin{cases} 2x+4y=1 \\ 2x+3y=9 \end{cases} \xrightarrow{\text{منهاص}} \begin{cases} 2x+4y=1 \\ 2x+3y-4=0 \end{cases}$

ب) $d = \frac{|c-c'|}{\sqrt{a^2+b^2}} = \frac{|-4-9|}{\sqrt{4+9}} = \frac{13}{\sqrt{13}} = \frac{13\sqrt{13}}{13}$

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

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

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

$\tan \alpha = \frac{m-m'}{1+mm'} = \frac{|-3-2|}{|1-6|} = \frac{5}{5} = 1 \Rightarrow \tan \alpha = 1 \rightarrow \alpha = 45^\circ \text{ یا } \frac{\pi}{4}$

الف) $\sqrt{(3-0)^2 + (-2-2)^2} = 10$ ب) $M\left(\frac{-5+3}{2}, \frac{4-2}{2}\right) \Rightarrow M(-1, 1)$

الف) $x \rightarrow \frac{-10-2+3}{3} = -3 \Rightarrow G(-3, -3)$
 $y \rightarrow \frac{-13+3+1}{3} = -3$

ب) $\frac{1}{3} \begin{vmatrix} -10 & -2 & 3 \\ -13 & 3 & 1 \\ 1 & 1 & 1 \end{vmatrix} = \frac{1}{3} (-30 - 2 - 39 - 9 + 10 - 24) = 41$

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

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

$$y = \frac{1-3x}{4x+2}$$

الف) $x' = x-2 \rightarrow x = x'+2$

$y' = y+3 \rightarrow y = y'-3 \Rightarrow y'-3 = \frac{2x'+4}{4(x'+2)+1} \rightarrow y' = \frac{2x'+4+3x'-6}{x'-1} = \frac{5x'-2}{x'-1} \Rightarrow$

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

ب) $x' = x-3 \rightarrow x = x'+3$

$y' = y-2 \rightarrow y = y'+2 \Rightarrow y'+2 = \frac{2x'+4}{4(x'+3)+1} \rightarrow y' = \frac{2x'+4-2x'-6}{x'+7} = \frac{-2}{x'+7} \Rightarrow$

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

الف) $\begin{cases} 3x+4y=2 \\ (x-5y=1)x-3 \end{cases} \Rightarrow \begin{cases} 3x+4y=2 \\ -3x+15y=-3 \end{cases}$

$19y = -1 \rightarrow y = -\frac{1}{19} \Rightarrow x = \frac{2-4(-\frac{1}{19})}{3} = \frac{\frac{42}{19}}{3} = \frac{14}{19} \Rightarrow$

$(+\frac{14}{19}, -\frac{1}{19})$

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

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