

انت $m = \frac{\Delta y}{\Delta x} \Rightarrow \frac{2 - (-2)}{9 - 5} = -2 \Rightarrow -2x + b = y \Rightarrow -2 \times 9 + b = 2 \Rightarrow b = 18 \rightarrow y = -2x + 18$

ب $y = \frac{-5x - 1}{2} \Rightarrow m = -2 \Rightarrow -2x + b = y \Rightarrow -2 \times 9 + b = 2 \Rightarrow b = 18 \rightarrow y = -2x + 18$

ج $m = -\frac{1}{3} \Rightarrow m \times m' = -1 \Rightarrow m' = 3 \Rightarrow 3x + b = y \Rightarrow 3 \times 9 + b = 2 \Rightarrow b = -25 \rightarrow y = 3x - 25$

د $\tan \frac{\pi}{4} = \sqrt{3} \Rightarrow \sqrt{3}x + b = y \Rightarrow \sqrt{3} \times 9 + b = 2 \Rightarrow b = 2 - 9\sqrt{3} \Rightarrow y = \sqrt{3}x + 2 - 9\sqrt{3}$

انت $M_{01} = \sqrt{(\Delta x)^2 + (\Delta y)^2} = \sqrt{(2 - (-1))^2 + (3 - 1)^2} = 5$

خط $M_{01} = \frac{|ax + by + c|}{\sqrt{a^2 + b^2}} \Rightarrow \frac{|3 \times 2 + 9 \times 3 - 2|}{\sqrt{3^2 + 9^2}} = \frac{15}{10} = 3$

انت ابتدا خط را به خط موازی تبدیل کنیم $9x + 5y = 18 \div 2 \Rightarrow 9x + 5y = 9 \leftarrow$

$\Rightarrow$ معادله خط موازی $= ax + by + \frac{c + c'}{2} \Rightarrow 9x + 5y + \frac{9 + (-9)}{2} \Rightarrow 9x + 5y - 0 = 0$

خط $M_{01} = \frac{|c - c'|}{\sqrt{a^2 + b^2}} \Rightarrow \frac{|9 - (-9)|}{\sqrt{9^2 + 5^2}} = \frac{18}{10} = 1.8$

$\frac{|ax + by + c|}{\sqrt{a^2 + b^2}} = \frac{|a'x + b'y + c'|}{\sqrt{a'^2 + b'^2}} \Rightarrow \frac{|3x - 2y - 1|}{\sqrt{10}} = \frac{|2x + 9y - 2|}{\sqrt{10}}$

$\Rightarrow 3x - 2y - 1 = 2x + 9y - 2 \Rightarrow x - 11y + 1 = 0$

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$\tan \alpha = \left| \frac{m - m'}{1 + mm'} \right| \Rightarrow \tan \alpha = \left| \frac{-2 - 2}{1 + (-2 \times 2)} \right| = \left| \frac{-4}{-3} \right| = 1$

$m = -2 \quad m' = 2 \Rightarrow \tan \alpha = 1 \Rightarrow \alpha = 45^\circ$

$y = -2x + 18$

$y = 2x + 5$

$$Moli = \sqrt{(\Delta x)^2 + (\Delta y)^2} = \sqrt{\left(\frac{3-(-5)}{2}\right)^2 + \left(\frac{-2-4}{2}\right)^2} = 10$$

(الف)

$$\Rightarrow M\left(\frac{x_1+x_2}{2}, \frac{y_1+y_2}{2}\right) = \left(\frac{3+(-5)}{2}, \frac{-2+4}{2}\right) = M(-1, 1)$$

$$\Rightarrow M\left(\frac{x_1+x_2+x_3}{3}, \frac{y_1+y_2+y_3}{3}\right) = M\left(\frac{3+(-2)+(-1)}{3}, \frac{1+2+(-1)}{3}\right) = M(-1, 0)$$

$$\frac{1}{3} \begin{vmatrix} -10 & -12 & 1 \\ -2 & 3 & 1 \\ 3 & 1 & 1 \end{vmatrix} = \frac{1}{3} [(-10)(-2)(1) + (-12)(1)(1) + (1)(3)(3) - (1)(-2)(3) - (-10)(1)(1) - (-12)(3)(1)] = \frac{1}{3} \times 95 = \frac{95}{3}$$

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

(الف) $y \leftarrow y$

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

(ب) $x \leftarrow x$

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

(ج) $x \leftarrow y$
 $y \leftarrow x$

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

(د) $-x \leftarrow y$
 $-y \leftarrow x$

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

(الف)

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(ب)

$$3x+5y=2 \quad 3x+5y=2$$

$$x-2y=1 \quad \times 2 \quad -2x+4y=2$$

$$\Rightarrow 19y = -1 \Rightarrow y = -\frac{1}{19} \Rightarrow x = \frac{18}{19}$$

(الف)

$$x = -\frac{\begin{vmatrix} 5 & 2 \\ -2 & 1 \end{vmatrix}}{\begin{vmatrix} 3 & 5 \\ 1 & -2 \end{vmatrix}} = \frac{18}{19} \quad y = -\frac{\begin{vmatrix} 3 & 2 \\ 1 & 1 \end{vmatrix}}{\begin{vmatrix} 3 & 5 \\ 1 & -2 \end{vmatrix}} = -\frac{1}{19}$$

(ب)