

الف) $\left \frac{x}{y} \right = \frac{5}{-2}$ $m = \frac{-2}{1} = -2$ $y - y_1 = m(x - x_1)$ $y - 2 = -2(x - 5)$ $y - 2 = -2x + 10$ $y = -2x + 12$	ب) $\left \frac{x}{y} \right = \frac{5}{-2}$ و $2x + 3y = 1$ $m = \frac{-2}{3} = -\frac{2}{3}$ $y - 2 = -\frac{2}{3}(x - 5)$ $y - 2 = -\frac{2}{3}x + \frac{10}{3}$ $y = -\frac{2}{3}x + \frac{16}{3}$	ج) $2x + 3y = 1$ و $\frac{\pi}{3} = 40^\circ$ $3y = 1 - 2x$ $y = -\frac{1}{3}x + \frac{1}{3}$ $y - 2 = -\frac{1}{3}(x - 5)$ $y - 2 = -\frac{1}{3}x + \frac{5}{3}$ $y = -\frac{1}{3}x + \frac{11}{3}$	۱
الف) $M \left \frac{x}{y} \right = N \left \frac{-1}{y} \right$ $MN = \sqrt{(-1-2)^2 + (7-3)^2} \Rightarrow \sqrt{(-3)^2 + 4^2}$ $\sqrt{9+16} \Rightarrow MN = 5$	ب) $\left \frac{x}{y} \right = \frac{1}{3}$ و $3x + 4y = 3$ $d = \frac{ 3(2) + 4(3) - 3 }{\sqrt{3^2 + 4^2}} = \frac{ 11 }{5}$ $d = \frac{ 5 }{5} = 1$	۲	
الف) $5x + 4y = 1$ و $(2x + 3y = 4)^{12}$ $5x + 4y = 12$ $5x + 4y = \frac{12+1}{5} \Rightarrow 5x + 4y = 10$	ب) $5x + 4y = 1$ و $(2x + 3y = 4)^{12}$ $5x + 4y = 12$ $d = \frac{ 12-1 }{\sqrt{5^2 + 4^2}} = \frac{11}{\sqrt{41}} = \frac{11}{\sqrt{41}}$	۳	
$3x - 2y = 1$ و $2x + 3y = 3$ $\frac{ 2x + 3y - 3 }{\sqrt{2^2 + 3^2}} = \frac{ 3x - 2y - 1 }{\sqrt{2^2 + 3^2}} \Rightarrow \frac{ 2x + 3y - 3 }{\sqrt{13}} = \frac{ 3x - 2y - 1 }{\sqrt{13}}$ $ 2x + 3y - 3 = 3x - 2y - 1 \rightarrow 1) 2x + 3y - 3 = -(3x - 2y - 1) \Rightarrow 5x + y = 4$	۲) $3x - 2y - 1 = -(2x + 3y - 3) \Rightarrow x - 5y = -4$	۴	
$y = 2x = 5$ و $y + 3x = 3$ $m_y = \frac{-(-2)}{1} = 2, m'_y = \frac{-3}{1} = -3$ $\tan \alpha = \frac{ 2 - (-3) }{ 1 + (-6) } = \frac{5}{5} = 1$ $\tan \alpha = 1$	$\beta = 180^\circ - \alpha = 135^\circ$	۵	

$$\text{الف) } A \begin{vmatrix} 3 \\ -2 \end{vmatrix} B \begin{vmatrix} -\omega \\ 1 \end{vmatrix}$$

$$AB = \sqrt{(-\omega-2)^2 + (1-(-2))^2} = \sqrt{(-1)^2 + (3)^2}$$

$$\sqrt{4+9} = \sqrt{13} = 10$$

$$\text{ب) } A \begin{vmatrix} 3 \\ -2 \end{vmatrix} B \begin{vmatrix} -\omega \\ 1 \end{vmatrix}$$

$$A \begin{vmatrix} 3 \\ -2 \end{vmatrix} M \begin{vmatrix} -\omega \\ 1 \end{vmatrix}$$

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

$$\text{ج) } \begin{vmatrix} -10 & -2 & 3 \\ -13 & 3 & 1 \end{vmatrix} \text{ مقلوب متساوي! الف) } \begin{vmatrix} -10 & -2 & 3 \\ -13 & 3 & 1 \end{vmatrix}$$

$$\frac{1}{2} \begin{vmatrix} 3 & 1 & 1 \\ -2 & 3 & 1 \\ -10 & -13 & 1 \end{vmatrix} = \frac{1}{2} (14) = 7$$

$$7 + (-10) + 29 - [(-3) - (-13) - (-2)] = 2$$

$$2\omega - 11 = 14$$

$$X_G = \frac{-10-2+3}{2} = \frac{-9}{2} = -4.5$$

$$Y_G = \frac{-13+3+1}{2} = \frac{-9}{2} = -4.5$$

مختصات مركز ثقل

$$\text{الف) } y = \frac{2x+1}{5x-3} \xrightarrow{\text{قريبه نسبت}} -y = \frac{2x+1}{5x-3}$$

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

$$\text{ج) } y = \frac{2x+1}{5x-3} \xrightarrow{\text{قريبه نسبت}} y = \frac{-2x+1}{-5x-3}$$

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

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

$$\text{الف) } y = \frac{2x+1}{5x-3} \quad \begin{vmatrix} 2 \\ -3 \end{vmatrix}$$

$$\begin{cases} x' = x-2 \\ y' = y+3 \end{cases} \rightarrow \begin{cases} x = x'+2 \\ y = y'-3 \end{cases}$$

$$y'-3 = \frac{2(x'+2)+1}{5(x'+2)-3} \rightarrow y' = \frac{2x'+5}{5x'+7} + 3$$

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

$$\begin{cases} x' = x-3 \\ y' = y-2 \end{cases} \rightarrow \begin{cases} x = x'+3 \\ y = y'+2 \end{cases}$$

$$y'+2 = \frac{2(x'+3)+1}{5(x'+3)-3} \Rightarrow y' = \frac{2x'+7}{5x'+12} - 2$$

$$\text{الف) } \begin{cases} 3x + 5y = 2 \\ x-3 \\ (2-\omega y = 1) \\ +14y = -3 \end{cases}$$

$$y = -\frac{1}{14} \quad 3x = \frac{14}{14} + \frac{5}{14} = \frac{19}{14}$$

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

$$x = -\frac{1}{14} \quad y = \frac{19}{14}$$

$$y = \frac{3-2}{-10-5} = -\frac{1}{15}$$