

الف) $B \mid \omega$ $m = \frac{y}{x} = \frac{52 - (-2)}{4 - 5} = -12$ $(y - 2) = -12(x - 4)$
 $y - 2 = -12x + 48 \Rightarrow y = -12x + 50$

ب) $2y + 6x = -1 \Rightarrow y + 3x = -\frac{1}{2} \Rightarrow y = -3x - \frac{1}{2}$ $m = -3$

$\frac{x=2}{y=5} \Rightarrow 5 = -3(2) + b \Rightarrow b = 11 \Rightarrow y = -3x + 11$

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

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

د) $m = \tan \frac{\pi}{4} = 1 \Rightarrow \frac{x=2}{y=5} \Rightarrow 5 = 2(2) + b \Rightarrow b = 1 \Rightarrow y = 2x - 1$

الف) $A \mid \frac{2}{3}$ $B \mid -1$ $d = \sqrt{5y^2 + 5x^2} = \sqrt{(5-3)^2 + (-1-2)^2} = \sqrt{4 + 9} = \sqrt{13} = \omega$ (سوال ٢)

ب) $3x + 5y = 3$

$d = \frac{|ax_0 + by_0 + c|}{\sqrt{a^2 + b^2}} = \frac{|3(2) + 5(2) - 3|}{\sqrt{9 + 25}} = \frac{|14 + 10 - 3|}{\sqrt{34}} = \frac{21}{\sqrt{34}} = \frac{15}{\omega} = 3$
 $ax + by = \frac{|C + C'|}{2}$

(سوال ٣)

الف) $2x + 3y = 6$

$(3x + 5y = 1) \times \frac{1}{5} = 3x + 5y = \frac{1}{5} \Rightarrow 2x + 3y = \frac{|1 + 6|}{5} \Rightarrow 2x + 3y = \omega$

ب) $\frac{|C - C'|}{\sqrt{a^2 + b^2}} \Rightarrow \frac{|6 - 1|}{\sqrt{2^2 + 3^2}} = \frac{5}{\sqrt{13}} = \frac{2\sqrt{13}}{13}$

(سوال ٤)

$3x - 2y = 1$
 $2x + 3y = 3$

$\frac{|ax + by + c|}{\sqrt{a^2 + b^2}} = \frac{|a'x + b'y + c'|}{\sqrt{a'^2 + b'^2}}$

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

$\Rightarrow \begin{cases} 3x - 2y - 1 = 2x + 3y - 3 & x - 5y + 2 = 0 \\ 3x - 2y - 1 = -(2x + 3y - 3) & 5x + y + 2 = 0 \end{cases}$

$$A) \begin{pmatrix} 1 & 1 \\ 1 & 1 \end{pmatrix} \quad B) \begin{pmatrix} 1 & -1 \\ 1 & 1 \end{pmatrix}$$

(5 د)

$$d = \sqrt{a_y^2 + a_x^2} = \sqrt{(1-1)^2 + (-1-1)^2} = \sqrt{0+4} = \sqrt{4} = 2$$

$$B) \quad \begin{aligned} x_M &= \frac{x_A + x_B}{2} = \frac{-1 + 1}{2} = \frac{0}{2} = 0 \\ y_M &= \frac{y_A + y_B}{2} = \frac{-1 + 1}{2} = \frac{0}{2} = 0 \end{aligned} \quad \Rightarrow M(0, 0)$$

$$الف) \quad \begin{aligned} x_M &= \frac{x_1 + x_2 + x_3}{3} = \frac{1 + (-1) + (-1)}{3} = \frac{-1}{3} \\ y_M &= \frac{y_1 + y_2 + y_3}{3} = \frac{-1 + 1 + 1}{3} = \frac{1}{3} \end{aligned} \quad \Rightarrow M(-\frac{1}{3}, \frac{1}{3})$$

$$ب) \quad \begin{vmatrix} 1 & -1 & -1 \\ 1 & 1 & -1 \\ 1 & 1 & 1 \end{vmatrix} = (-1)(1) + (-1)(1) - 9 - (-1) - (1) = -9 \Rightarrow S = \frac{|-9|}{3} = 3$$

$$الف) \quad \Rightarrow -y = \frac{x+1}{x-1} \Rightarrow y = -\frac{x+1}{x-1} \quad y = \frac{x+1}{x-1} \quad (1 د)$$

$$ب) \quad y = \frac{x(-1)+1}{x(-1)-1} \Rightarrow y = \frac{-x+1}{-x-1}$$

$$ج) \quad x = \frac{y+1}{y-1} \Rightarrow y = -\frac{x-1}{x+1} = \frac{1-x}{x+1}$$

$$د) \quad \Rightarrow -y = -\frac{x-1}{x+1} \Rightarrow y = \frac{x-1}{x+1}$$

$$الف) \quad \begin{aligned} \alpha' &= \alpha + 1 \Rightarrow \alpha = \alpha' - 1 \\ \beta' &= \beta - (-1) \Rightarrow \beta = \beta' - 1 \end{aligned} \quad y = \frac{x+1}{x-1} \quad (9 د)$$

$$\beta' - 1 = \frac{x(\alpha' - 1) + 1}{(\alpha' - 1) - 1} = \frac{x\alpha' - x + 1}{\alpha' - 2} \Rightarrow \beta' = \frac{x\alpha' - x + 1}{\alpha' - 2} + 1 = \frac{x\alpha' - x + 1 + \alpha' - 2}{\alpha' - 2} = \frac{\alpha'x + \alpha' - x - 1}{\alpha' - 2}$$

$$\rightarrow \begin{cases} \alpha' = \alpha - \mu \Rightarrow \alpha = \alpha' + \mu \\ \beta' = \beta - \mu \Rightarrow \beta = \beta' + \mu \end{cases}$$

$$\beta' + \mu = \frac{\mu(\alpha' + \mu) + \mu}{(\alpha' + \mu) - \mu} = \frac{\mu\alpha' + \mu}{\alpha' + 1} \Rightarrow \beta' = \frac{\mu\alpha' + \mu - \mu\alpha' - \mu}{\alpha' + 1} = \frac{0}{\alpha' + 1} = 0 \Rightarrow \beta' = \frac{0}{\alpha'}$$

$$\boxed{y = \frac{0}{x}}$$

و) $\begin{cases} \mu x + \epsilon y = 1 \\ x - \omega y = 1 \end{cases} \xrightarrow{x(-\mu)} \begin{cases} \mu x + \epsilon y = 1 \\ -\mu x + \omega y = -\mu \end{cases}$

$$\oplus \quad \begin{cases} \mu x + \epsilon y = 1 \\ -\mu x + \omega y = -\mu \end{cases} \Rightarrow \begin{cases} \mu x + \epsilon y = 1 \\ 19y = -1 \end{cases} \Rightarrow y = \frac{-1}{19}$$

$$x = 1 + \omega \left(\frac{-1}{19} \right) = \frac{19 - \omega}{19} = \frac{18}{19}$$

و) $\begin{cases} \mu x + \epsilon y = 1 \\ x - \omega y = 1 \end{cases}$

$$x = - \frac{\begin{vmatrix} \mu & 1 \\ -\omega & 1 \end{vmatrix}}{\begin{vmatrix} \mu & \epsilon \\ 1 & -\omega \end{vmatrix}} = - \frac{\mu - (-1)}{-1\omega - \epsilon} = - \frac{\mu + 1}{-1\omega - \epsilon} = \frac{\mu + 1}{1\omega + \epsilon}$$

$$y = \frac{\begin{vmatrix} \mu & 1 \\ 1 & -\omega \end{vmatrix}}{\begin{vmatrix} \mu & \epsilon \\ 1 & -\omega \end{vmatrix}} = \frac{\mu - 1}{-1\omega - \epsilon} = \frac{1}{-1\omega - \epsilon} = \frac{-1}{1\omega + \epsilon}$$