

الف) $|f, \omega_v \rightarrow m = \frac{\Delta y}{\Delta x} = \frac{4+4}{4-4} = -4, y = ax + b \xrightarrow{a=-4} y = -4x + b$
 $(4, 4) \rightarrow 4 = -4(4) + b \rightarrow b = 18$
 $y = -4x + 18$

ب) $|f, 2y + 4x = -1 \rightarrow$ وقتی ۲ خط موازی اند که هم شیب با هم دارند $\rightarrow m = \frac{-4}{2} = -2, y = ax + b \xrightarrow{a=-2} y = -2x + b$
 $(4, 2) \rightarrow 2 = -2(4) + b \rightarrow b = 14$
 $y = -2x + 14$

ج) $|f, x + 3y = 1 \rightarrow$ وقتی ۲ خط موازی اند که مایل ضرب شیب ها برابر ۱- شود $\rightarrow m \times \frac{-1}{3} = -1 \rightarrow m = 3, y = ax + b \xrightarrow{a=3} y = 3x + b$
 $(4, 2) \rightarrow 2 = 3(4) + b \rightarrow b = -10$
 $y = 3x - 10$

د) $|f, \tan \frac{\pi}{4} \rightarrow$ وقتی باجهت مثبت محور ها زاویه سباز دتا نر است زاویه برابر شیب است $\rightarrow m = \tan \frac{\pi}{4} = \tan 45^\circ = \sqrt{3}, y = ax + b \xrightarrow{a=\sqrt{3}} y = \sqrt{3}x + b$
 $(4, 2) \rightarrow 2 = 4\sqrt{3} + b \rightarrow b = 2 - 4\sqrt{3}$
 $y = \sqrt{3}x + 2 - 4\sqrt{3}$

الف) $A|f, B|f \rightarrow AB = \sqrt{\Delta x^2 + \Delta y^2} \rightarrow \sqrt{(3+1)^2 + (3-4)^2} = \sqrt{5} = \omega$

ب) $A|f, 3x + 4y = 3 \rightarrow d = \frac{|ax_0 + by_0 + c|}{\sqrt{a^2 + b^2}} = \frac{|3(2) + 4(3) - 3|}{\sqrt{3^2 + 4^2}} = \frac{15}{5} = 3$

الف) $2x + 3y = 4, 4x + 9y = 11 \rightarrow$ برای این معادلات خطی دوتا میانی این دو خط موازی با هم باشند یا نه ضریب x و y برابر باشد و عدد مایل ضریب ها باشد $\rightarrow$ $ax + by + c = 0$
 $2x + 3y = 4 \xrightarrow{\times 2} 4x + 6y = 8$
 $4x + 9y = 11$
 $\xrightarrow{\text{تفاوت}} 4x + 9y - 4x - 6y = 8 - 11$
 $3y - 3 = -3 \rightarrow 3y = 0 \rightarrow y = 0$
 $4x + 9(0) = 11 \rightarrow 4x = 11 \rightarrow x = \frac{11}{4}$
 $d = \frac{|c - c'|}{\sqrt{a^2 + b^2}} = \frac{|11 - 8|}{\sqrt{4^2 + 9^2}} = \frac{3}{5} = \frac{3}{5}$

$3x - 2y = 1, 2x + 3y = 3$
 $\frac{|ax + by - c|}{\sqrt{a^2 + b^2}} = \frac{|a'x + b'y - c'|}{\sqrt{a'^2 + b'^2}}$
 $\frac{|3x - 2y - 1|}{\sqrt{3^2 + (-2)^2}} = \frac{|2x + 3y - 3|}{\sqrt{2^2 + 3^2}} \rightarrow |3x - 2y - 1| = |2x + 3y - 3|$
 $\rightarrow \begin{cases} 3x - 2y - 1 = 2x + 3y - 3 \rightarrow x - 5y = -2 \\ 3x - 2y - 1 = -(2x + 3y - 3) \rightarrow 5x + y = 4 \end{cases}$

$g + 3x = 3, g - 2x = 4$

$\rightarrow m = -3 \quad m = 2$

$\tan \alpha = \left| \frac{m - m'}{1 + mm'} \right| = \left| \frac{-3 - 2}{1 - 6} \right| = \left| \frac{-5}{-5} \right| = 1$

$\tan \alpha = 1$
 $\alpha = \frac{\pi}{4} = 45^\circ$

$$\text{الف) } A \begin{vmatrix} 3 & -5 \\ -2 & 4 \end{vmatrix} \quad AB = \sqrt{(3+0)^2 + (-2-4)^2} = \sqrt{49+36} = 10$$

$$\text{ب) } m \left(\frac{x_A + x_B}{2}, \frac{y_A + y_B}{2} \right) = \left(\frac{3-5}{2}, \frac{-2+4}{2} \right) = (-1, 1)$$

$$\text{الف) } \begin{vmatrix} 1 & 3 & 1 & -2 & 1 & -10 \end{vmatrix} \quad x_G = \frac{x_1 + x_2 + x_3 + x_4}{4} \rightarrow \frac{3-2-10}{4} = -2 \Rightarrow (-2, -2)$$

$$y_G = \frac{y_1 + y_2 + y_3 + y_4}{4} \rightarrow \frac{1+4-13}{4} = -2$$

$$\text{ب) } S = \frac{1}{4} \begin{vmatrix} x_1 & y_1 & 1 \\ x_2 & y_2 & 1 \\ x_3 & y_3 & 1 \\ x_4 & y_4 & 1 \end{vmatrix} = \frac{1}{4} \begin{vmatrix} 3 & 1 & 1 \\ -2 & -2 & 1 \\ -10 & -2 & 1 \end{vmatrix} = \frac{1}{4} (9 + 24 - 10 + 20 + 20 + 2) = 17$$

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

$$\text{الف) } \pm \text{ فرق } \rightarrow -y = \frac{2x+1}{x-2} \Rightarrow y = \frac{2x+1}{2-x}$$

$$\text{ب) } \pm \text{ فرق } \rightarrow y = \frac{-2x+1}{-x-2} \xrightarrow{\frac{y}{y}} y = \frac{-2x+1}{-x-2}$$

$$\text{ج) } \pm \text{ فرق } \rightarrow x = \frac{2y+1}{2y-2} \rightarrow y = \frac{-2x-1}{2-x} \xrightarrow{\frac{y}{y}} y = \frac{-2x-1}{2-x}$$

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

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

$$\text{الف) } \begin{cases} x' = x - 2 \\ y' = y + 2 \end{cases} \rightarrow \begin{cases} x = x' + 2 \\ y = y' - 2 \end{cases}$$

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

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

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

$$\text{ب) } \begin{cases} x' = x - 2 \\ y' = y - 2 \end{cases} \rightarrow \begin{cases} x = x' + 2 \\ y = y' + 2 \end{cases}$$

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

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

$$y' = \frac{1}{x'}$$

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

$$\text{الف) } \begin{cases} 3x + 4y = 2 \\ x - 5y = 1 \end{cases} \xrightarrow{\times 5} \begin{cases} 3x + 4y = 2 \\ 5x - 25y = 5 \end{cases}$$

$$19y = -1$$

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

$$\text{ب) } \text{كروا} \rightarrow x = -\frac{(4)(1) - (3)(-5)}{(3)(-5) - (4)(1)} = \frac{-14}{-19} = \frac{14}{19}$$

$$y = \frac{(3)(1) - (1)(4)}{(3)(-5) - (4)(1)} = \frac{-1}{19}$$