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Date _____

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أ) $\left| \begin{matrix} 1 & 2 \\ 2 & -1 \end{matrix} \right| \rightarrow m = \frac{1 - (-2)}{2 - 1} = -1 \Rightarrow y = -x + b \xrightarrow{(1,2)} y = -x + 1$ -1

ب) $2y + 4x = -1 \rightarrow y = -\frac{1}{2}x - \frac{1}{4} \Rightarrow m = -\frac{1}{2} \quad y = -\frac{1}{2}x + b \xrightarrow{(1,2)} y = -\frac{1}{2}x + \frac{5}{2}$ 5

ج) $x + 3y = 1 \rightarrow y = -\frac{1}{3}x + \frac{1}{3} \Rightarrow m = -\frac{1}{3} \rightarrow m' = 3 \quad y = 3x + b \xrightarrow{(5,2)} y = 3x - 10$

د) $m = \tan \frac{\pi}{4} = \frac{\frac{\sqrt{3}}{2}}{\frac{1}{2}} = \sqrt{3} \Rightarrow y = \sqrt{3}x + b \xrightarrow{(1,2)} y = \sqrt{3}x + 2 - \sqrt{3}$

أ) $d = \sqrt{\Delta x^2 + \Delta y^2} = \sqrt{(1+1)^2 + (1-3)^2} = \sqrt{4+4} = 2\sqrt{2}$ -2

ب) $d = \frac{|ax + by + c|}{\sqrt{a^2 + b^2}} \Rightarrow d = \frac{|3(2) + 4(3) - 13|}{\sqrt{9+16}} = \frac{10}{5} = 2$ 5

أ) $\begin{cases} 3x + 4y = 1 \\ 3x + 4y = 12 \end{cases} \Rightarrow y'' = 3x + 4y = \left(\frac{1+12}{4}\right) \Rightarrow 3x + 4y = 10$ 3
 $\begin{cases} 3x + 4y = 10 \\ 3x + 4y = 12 \end{cases} \Rightarrow 2 = 0$ 5

ب) $d = \frac{|c - c'|}{\sqrt{a^2 + b^2}} = \frac{12 - 1}{\sqrt{14 + 14}} = \frac{11}{\sqrt{28}} = \frac{11\sqrt{7}}{14}$

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

$\Rightarrow |3x - 2y - 1| = |2x + 3y - 3| \rightarrow 3x - 2y - 1 = 2x + 3y - 3 \Rightarrow x - 5y = -2$ 5

$\hookrightarrow 3x - 2y - 1 = -2x - 3y + 3 \Rightarrow 5x + y = 4$

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$$y + 3x = 4 \rightarrow m = -3 \quad y - 2x = 5 \rightarrow m' = 2$$

$$\tan \alpha = \left| \frac{m - m'}{1 + mm'} \right| = \frac{5}{5} = 1 \Rightarrow \alpha = \frac{\pi}{4} \quad (F\alpha = \cos(\alpha) \sin(\alpha))$$

$$\text{جواب} d = \sqrt{\Delta x^2 + \Delta y^2} \Rightarrow d = \sqrt{(3+5)^2 + (4+2)^2} = \sqrt{100} = 10$$

$$\text{ب) } x_c = \frac{-5+3}{2} = -1 \quad y_c = \frac{4-2}{2} = 1 \quad C = (-1, 1)$$

$$\text{جواب} x_G = \frac{-10-2+3}{3} = -3 \quad y_G = \frac{-13+3+1}{3} = -3 \Rightarrow G = (-3, -3)$$

$$S = \frac{1}{3} \begin{vmatrix} -10 & -13 & 1 \\ -2 & 3 & 1 \\ 3 & 1 & 1 \end{vmatrix} = \frac{1}{3} \begin{vmatrix} -10 & -13 & 1 \\ -2 & 3 & 1 \\ 3 & 1 & 1 \end{vmatrix} = \frac{1}{3} \begin{vmatrix} -10 & -13 & 1 \\ -2 & 3 & 1 \\ 3 & 1 & 1 \end{vmatrix} = \frac{1}{3} \times 92 = \frac{92}{3}$$

$$\text{جواب} x \text{ محور } \Rightarrow -y = \frac{2x+1}{2x-3} \Rightarrow y = \frac{2x+1}{3-2x}$$

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

$$\text{ج) } x \text{ محور } \Rightarrow x = \frac{2y+1}{2y-3} \rightarrow y = -\left(\frac{-2x-1}{2x-3} \right) \Rightarrow y = \frac{2x+1}{2x-3}$$

$$\text{د) } y \text{ محور } \Rightarrow -x = \frac{-2y+1}{-2y-3} \Rightarrow -2yx - 2x = 2y - 1 \Rightarrow y = \frac{1-2x}{2x+2}$$

$$\text{جواب} z' = x - 2 \Rightarrow x = x' + 2 \quad y' = y + 3 \Rightarrow y = y' - 3$$

$$y = \frac{2x+1}{x-3} \rightarrow (y-3) = \frac{2(x'+2)+1}{(x'+2)-3} \Rightarrow y' = \frac{2x'+5}{x'-1} + 3 \Rightarrow y' = \frac{2x'+8}{x'-1}$$

$$\text{ب) } \left. \begin{array}{l} x = x' + 2 \\ y = y' + 3 \end{array} \right\} \quad y' + 3 = \frac{2(x' + 2) + 1}{x' + 2 - 3} \Rightarrow y' = \frac{2}{x'}$$

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الف)
$$\begin{cases} 3x + 4y = 2 \\ x - 2y = 1 \end{cases} \rightarrow \begin{cases} 3x + 4y = 2 \\ 3x - 12y = 3 \end{cases} \Rightarrow 16y = -1 \Rightarrow y = -\frac{1}{16}$$

$$x = \frac{-2}{16} + 1 = \frac{14}{16}$$
 -10

ب)
$$\begin{cases} 3x + 4y = 2 \\ x - 2y = 1 \end{cases} \quad x = \frac{-2 + 10}{-12 - 4} = -\frac{14}{16}$$

$$y = \frac{3 - 2}{-12 - 4} = -\frac{1}{16}$$