

۱- $m = \frac{y_2 - y_1}{x_2 - x_1} = \frac{2 - (-2)}{4 - 0} = \frac{4}{4} = 1 \rightarrow y = x + b$ (۲)

از نقطه $(4, 2)$ $\rightarrow 2 = 4 + b \Rightarrow b = -2 \rightarrow y = x - 2$

از نقطه $(0, -2)$ $\rightarrow -2 = 0 + b \Rightarrow b = -2 \rightarrow y = x - 2$

۲- $m = \frac{b}{a} = \frac{4}{-3} = -\frac{4}{3} \rightarrow y = -\frac{4}{3}x + b$ (۲)

از نقطه $(4, 2)$ $\rightarrow 2 = -\frac{4}{3}(4) + b \Rightarrow 2 = -\frac{16}{3} + b \Rightarrow b = 2 + \frac{16}{3} = \frac{22}{3} \rightarrow y = -\frac{4}{3}x + \frac{22}{3}$

از نقطه $(0, -2)$ $\rightarrow -2 = 0 + b \Rightarrow b = -2 \rightarrow y = -\frac{4}{3}x - 2$

۳- $m_1 \cdot m_2 = -1 \rightarrow \frac{1}{3} \cdot m_2 = -1 \Rightarrow m_2 = -3 \rightarrow y = -3x + b$

از نقطه $(4, 2)$ $\rightarrow 2 = -3(4) + b \Rightarrow 2 = -12 + b \Rightarrow b = 14 \rightarrow y = -3x + 14$

از نقطه $(0, -2)$ $\rightarrow -2 = 0 + b \Rightarrow b = -2 \rightarrow y = -3x - 2$

۴- $m = \tan 60^\circ = \sqrt{3} \rightarrow y = \sqrt{3}x + b$ (۲)

از نقطه $(4, 2)$ $\rightarrow 2 = \sqrt{3}(4) + b \Rightarrow b = 2 - 4\sqrt{3} \rightarrow y = \sqrt{3}x + 2 - 4\sqrt{3}$

از نقطه $(0, -2)$ $\rightarrow -2 = 0 + b \Rightarrow b = -2 \rightarrow y = \sqrt{3}x - 2$

۱- $\sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2} = \sqrt{(4 - 0)^2 + (2 - (-2))^2} = \sqrt{16 + 16} = \sqrt{32} = 4\sqrt{2}$ (۲)

۲- $\frac{|ax_1 + by_1 + c|}{\sqrt{a^2 + b^2}} = \frac{|6(4) + 12(-2) - 3|}{\sqrt{3^2 + 4^2}} = \frac{|24 - 24 - 3|}{5} = \frac{3}{5}$ (۲)

۳- $\frac{|c - c'|}{\sqrt{a^2 + b^2}} = \frac{|-2 - 2|}{\sqrt{1^2 + 1^2}} = \frac{4}{\sqrt{2}} = 2\sqrt{2}$ (۲)

۱- $2x + 3y = 4$ (۲)

۲- $2x + 3y = 6$

۳- $2x + 3y = 4$ (۲)

۴- $2x + 3y = 6$

۱- $2x + 3y = 4$ (۲)

۲- $2x + 3y = 6$

۳- $2x + 3y = 4$ (۲)

۴- $2x + 3y = 6$

۱- $2x + 3y = 4$ (۲)

۲- $2x + 3y = 6$

۳- $2x + 3y = 4$ (۲)

۴- $2x + 3y = 6$

۱- $2x + 3y = 4$ (۲)

۲- $2x + 3y = 6$

۳- $2x + 3y = 4$ (۲)

۴- $2x + 3y = 6$

$$\begin{vmatrix} -10 & -2 \\ -13 & 3 \end{vmatrix} \begin{vmatrix} 3 \\ 1 \end{vmatrix} \rightarrow \text{سه رأس متعلق}$$

$$\text{الف) مَرْتَبَعِيَّات} \Rightarrow z_G = \frac{z_1 + z_2 + z_3}{3} \Rightarrow z_G = \frac{-10 - 2 + 3}{3} = \frac{-9}{3} = -3 \quad (-3, -3) \checkmark$$

$$y_G = \frac{y_1 + y_2 + y_3}{3} \Rightarrow y_G = \frac{-13 + 3 + 1}{3} = \frac{-9}{3} = -3$$

$$\text{ب) مساحت} \Rightarrow S = \frac{1}{2} \begin{vmatrix} z_1 & y_1 & 1 \\ z_2 & y_2 & 1 \\ z_3 & y_3 & 1 \end{vmatrix} = \frac{1}{2} \begin{vmatrix} -10 & -13 & 1 \\ -2 & 3 & 1 \\ 3 & 1 & 1 \end{vmatrix} = \frac{1}{2} (-10 \cdot 3 \cdot 1 - 13 \cdot 1 \cdot 1 - 2 \cdot 1 \cdot 1 - 2 \cdot 1 \cdot 1 + 10) = \frac{9}{2} = 4.5 \checkmark$$

$$y = \frac{2z+1}{3z-2} \quad (2) \quad -1$$

$$\text{الف) } -y = \frac{2z+1}{3z-2} \Rightarrow y = \frac{-2z-1}{3z-2} \checkmark$$

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

$$\text{ج) } z = \frac{2y+1}{3y-2} \Rightarrow 3zy - 2z = 2y+1 \Rightarrow 3zy - 2y = 2z+1 \Rightarrow y(3z-2) = 2z+1 \Rightarrow y = \frac{2z+1}{3z-2} \checkmark$$

$$\text{د) } -z = \frac{-2y+1}{-3y-2} \Rightarrow 3zy + 2z = -2y+1 \Rightarrow 3zy + 2y = -2z+1 \Rightarrow y(3z+2) = -2z+1 \Rightarrow y = \frac{-2z+1}{3z+2} \checkmark$$

$$y = \frac{2z+1}{3z-2}$$

$$\text{الف) } \begin{cases} z' = z-2 \rightarrow z = z'+2 \\ y' = y+3 \rightarrow y = y'-3 \end{cases} \xrightarrow{\text{جایگزینی}} y'-3 = \frac{2(z'+2)+1}{3(z'+2)-2} \Rightarrow y' = \frac{2z'+5}{3z'+4} + 3 \Rightarrow y' = \frac{2z'+19}{3z'+4} \checkmark$$

$$\text{ب) } \begin{cases} z' = z-3 \rightarrow z = z'+3 \\ y' = y-2 \rightarrow y = y'+2 \end{cases} \xrightarrow{\text{جایگزینی}} y'+2 = \frac{2(z'+3)+1}{3(z'+3)-3} \Rightarrow y' = \frac{2z'+7}{3z'+6} - 2 \Rightarrow y' = \frac{2z'+1}{3z'+6} \checkmark$$

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

$$\text{الف) روش حذفی} \rightarrow \begin{cases} 3z+4y=2 \\ z-5y=1 \cdot (-3) \end{cases} \rightarrow \begin{cases} 3z+4y=2 \\ -3z+15y=-3 \end{cases} \Rightarrow 19y = -1 \Rightarrow y = \frac{-1}{19}, z = \frac{18}{19} \quad (2) \quad -10$$

$$\text{روش دترمینان} \rightarrow z = - \frac{\begin{vmatrix} 4 & 2 \\ 15 & 1 \end{vmatrix}}{\begin{vmatrix} 3 & 4 \\ 1 & -5 \end{vmatrix}} = - \frac{4 \cdot 1 - 2 \cdot 15}{-15 - 4} = - \frac{4 - 30}{-19} = \frac{18}{19}$$

$$y = \frac{\begin{vmatrix} 3 & 2 \\ 1 & 1 \end{vmatrix}}{\begin{vmatrix} 3 & 4 \\ 1 & -5 \end{vmatrix}} = \frac{3 \cdot 1 - 2 \cdot 1}{-15 - 4} = \frac{1}{-19} = \frac{-1}{19}$$