

1

Resol per la regla de Cramer:

$$\left. \begin{array}{l} x + y + z = 2 \\ 2x - y + z = -3 \\ 3x + 2y + 3z = 3 \end{array} \right\}$$

$$|A| = \begin{vmatrix} 1 & 1 & 1 \\ 2 & -1 & 1 \\ 3 & 2 & 3 \end{vmatrix} = -1 \neq 0$$

$$|A_x| = \begin{vmatrix} 2 & 1 & 1 \\ -3 & -1 & 1 \\ 3 & 2 & 3 \end{vmatrix} = -1 \Rightarrow x = \frac{|A_x|}{|A|} = \frac{-1}{-1} = 1$$

$$|A_y| = \begin{vmatrix} 1 & 2 & 1 \\ 2 & -3 & 1 \\ 3 & 3 & 3 \end{vmatrix} = -1 \Rightarrow y = \frac{|A_y|}{|A|} = \frac{-3}{-1} = 3$$

$$|A_z| = \begin{vmatrix} 1 & 1 & 2 \\ 2 & -1 & -3 \\ 3 & 2 & 3 \end{vmatrix} = 2 \Rightarrow z = \frac{|A_z|}{|A|} = \frac{2}{-1} = -2$$

2

Resol per la regla de Cramer:

$$\left. \begin{array}{l} y + z = 3 \\ x + 2y = -1 \\ 3x + y = -8 \end{array} \right\}$$

$$|A| = \begin{vmatrix} 0 & 1 & 1 \\ 1 & 2 & 0 \\ 3 & 1 & 0 \end{vmatrix} = -5 \neq 0$$

$$|A_x| = \begin{vmatrix} 3 & 1 & 1 \\ -1 & 2 & 0 \\ -8 & 1 & 0 \end{vmatrix} = 15 \Rightarrow x = \frac{|A_x|}{|A|} = \frac{15}{-5} = -3$$

$$|A_y| = \begin{vmatrix} 0 & 3 & 1 \\ 1 & -1 & 0 \\ 3 & -8 & 0 \end{vmatrix} = -5 \Rightarrow y = \frac{|A_y|}{|A|} = \frac{-5}{-5} = 1$$

$$|A_z| = \begin{vmatrix} 0 & 1 & 3 \\ 1 & 2 & -1 \\ 3 & 1 & -8 \end{vmatrix} = -10 \Rightarrow z = \frac{|A_z|}{|A|} = \frac{-10}{-5} = 2$$

3

Resol per la regla de Cramer:

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

$$\Delta = \begin{vmatrix} 2 & -1 & 1 \\ 0 & 2 & -1 \\ -1 & 1 & 0 \end{vmatrix} = 3$$

$$x = \frac{\begin{vmatrix} 3 & -1 & 1 \\ 1 & 2 & -1 \\ 1 & 1 & 0 \end{vmatrix}}{3} = \frac{3}{3} = 1$$

$$y = \frac{\begin{vmatrix} 2 & 3 & 1 \\ 0 & 1 & -1 \\ -1 & 1 & 0 \end{vmatrix}}{3} = \frac{6}{3} = 2$$

$$z = \frac{\begin{vmatrix} 2 & -1 & 3 \\ 0 & 2 & 1 \\ -1 & 1 & 1 \end{vmatrix}}{3} = \frac{9}{3} = 3$$

4

Resol per la regla de Cramer:

$$\begin{cases} x + y + z = 1 \\ x - y + z = 1 \\ -x + y + z = 1 \end{cases}$$

$$\Delta = \begin{vmatrix} 1 & 1 & 1 \\ 1 & -1 & 1 \\ -1 & 1 & 1 \end{vmatrix} = -4$$

$$x = \frac{\begin{vmatrix} 1 & 1 & 1 \\ 1 & -1 & 1 \\ 1 & 1 & 1 \end{vmatrix}}{-4} = \frac{0}{-4} = 0 \quad y = \frac{\begin{vmatrix} 1 & 1 & 1 \\ 1 & 1 & 1 \\ -1 & 1 & 1 \end{vmatrix}}{-4} = \frac{0}{-4} = 0$$

$$z = \frac{\begin{vmatrix} 1 & 1 & 1 \\ 1 & -1 & 1 \\ -1 & 1 & 1 \end{vmatrix}}{-4} = \frac{-4}{-4} = 1$$

5

Resol per la regla de Cramer:

$$\begin{cases} x + 2y - 2z = 10 \\ 4x - y + z = 4 \\ -2x + y + z = -2 \end{cases}$$

$$\begin{vmatrix} 1 & 2 & -2 \\ 4 & -1 & 1 \\ -2 & 1 & 1 \end{vmatrix} = -18 \neq 0$$

$$x = \frac{\begin{vmatrix} 10 & 2 & -2 \\ 4 & -1 & 1 \\ -2 & 1 & 1 \end{vmatrix}}{-18} = \frac{-36}{-18} = 2 \quad y = \frac{\begin{vmatrix} 1 & 10 & -2 \\ 4 & 4 & 1 \\ -2 & -2 & 1 \end{vmatrix}}{-18} = \frac{-54}{-18} = 3$$

$$z = \frac{\begin{vmatrix} 1 & 2 & 10 \\ 4 & -1 & 4 \\ -2 & 1 & -2 \end{vmatrix}}{-18} = \frac{18}{-18} = -1$$

6

Resol per la regla de Cramer:

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

$$\Delta = \begin{vmatrix} 1 & 1 & 1 \\ 1 & -2 & 3 \\ 1 & 0 & 1 \end{vmatrix} = 2 \quad \Delta_1 = \begin{vmatrix} 1 & 1 & 1 \\ 2 & -2 & 3 \\ 5 & 0 & 1 \end{vmatrix} = 21$$

$$\Delta_2 = \begin{vmatrix} 1 & 1 & 1 \\ 1 & 2 & 3 \\ 1 & 5 & 1 \end{vmatrix} = -8 \quad \Delta_3 = \begin{vmatrix} 1 & 1 & 1 \\ 1 & -2 & 2 \\ 1 & 0 & 5 \end{vmatrix} = -11$$

$$x = \frac{21}{2} \quad y = \frac{-8}{2} = -4 \quad z = \frac{-11}{2}$$