

Άσκηση:

Να βρεθεί η λύση του συστήματος με τον κανόνα του Cramer

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

Λύση:

$$D = \begin{vmatrix} 1 & 1 & 1 \\ 1 & -2 & -3 \\ 2 & 1 & -1 \end{vmatrix} = 1(2 + 3) - 1(-1 + 6) + 1(1 + 4) = 5 - 5 + 5 = 5$$

$$N_x = \begin{vmatrix} 5 & 1 & 1 \\ -1 & -2 & -3 \\ 3 & 1 & -1 \end{vmatrix} = 5(2 + 3) - 1(1 + 9) + 1(-1 + 6) = 25 - 10 + 5 = 20$$

$$N_y = \begin{vmatrix} 1 & 5 & 1 \\ 1 & -1 & -3 \\ 2 & 3 & -1 \end{vmatrix} = 1(1 + 9) - 5(-1 + 6) + 1(3 + 2) = 10 - 25 + 5 = -10$$

$$N_z = \begin{vmatrix} 1 & 1 & 5 \\ 1 & -2 & -1 \\ 2 & 1 & 3 \end{vmatrix} = 1(-6 + 1) - 1(3 + 2) + 5(1 + 4) = -5 - 5 + 25 = 15$$

$$x = \frac{N_x}{D} = \frac{20}{5} = 4, \quad y = \frac{N_y}{D} = \frac{-10}{5} = -2, \quad z = \frac{N_z}{D} = \frac{15}{5} = 3$$