SISTEMAS LINEARES – REGRA DE CRAMMER

a) $\Delta = \begin{vmatrix} -3 & 1 \\ 2 & -5 \end{vmatrix}$

10/03/2021 – Cálculo Numérico

a) $\Delta = \begin{vmatrix} -3 & 1 \\ 2 & -5 \end{vmatrix} = 15 - 2 = 13 \neq 0$

a) $\begin{cases} -3x + y = -10 \\ 2x - 5y = -8 \end{cases}$

$\Delta x = \begin{vmatrix} -10 & 1 \\ -8 & -5 \end{vmatrix} = 50 - (-8) = 58$

$\Delta y = \begin{vmatrix} -3 & -10 \\ 2 & -8 \end{vmatrix} = 24 - (-20) = 44$

$x = \dfrac{\Delta x}{\Delta} = \dfrac{58}{13}$

$y = \dfrac{\Delta y}{\Delta} = \dfrac{44}{13}$

$-3 \cdot \dfrac{58}{13} + \dfrac{44}{13} = \dfrac{-174 + 44}{13} = \dfrac{-130}{13} = -10$

$2 \cdot \dfrac{58}{13} - 5 \cdot \dfrac{44}{13} = \dfrac{116 - 220}{13} = \dfrac{-104}{13} = -8$

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

$$\Delta = \begin{vmatrix} 2 & 1 & 1 \\ 1 & -3 & 2 \\ 3 & 1 & -1 \end{vmatrix} \begin{matrix} 2 & 1 \\ 1 & -3 \\ 3 & 1 \end{matrix} = 6 + 6 + 1 - (-9) - 4 - (-1)$$

$$18 + 5 - 4 + 1$$

$$19$$

$$\Delta x = \begin{vmatrix} 1 & 1 & 1 \\ -1 & -3 & 2 \\ 4 & 1 & -1 \end{vmatrix} \begin{matrix} 1 & 1 \\ -1 & -3 \\ 4 & 1 \end{matrix} = 3 + 8 + (-1) - (-12) - 2 - 1$$

$$11 - 1 + 12 - 3$$

$$10 + 9$$

$$19$$

$$\Delta y = \begin{vmatrix} 2 & 1 & 1 \\ 1 & -1 & 2 \\ 3 & 4 & -1 \end{vmatrix} \begin{matrix} 2 & 1 \\ 1 & -1 \\ 3 & 4 \end{matrix} = 2 + 6 + 4 - (-3) - 16 - (-1)$$

$$12 + 3 - 16 + 1$$

$$15 - 15$$

$$\boxed{0}$$

$$\Delta z = \begin{vmatrix} 2 & 1 & 1 \\ 1 & -3 & -1 \\ 3 & 1 & 4 \end{vmatrix} \begin{matrix} 2 & 1 \\ 1 & -3 \\ 3 & 1 \end{matrix} = -24 + (-3) + 1 - (-9) - (-2) - 4$$

$$-27 + 1 + 9 + 2 - 4$$

$$-26 + 9 - 2$$

$$-26 + 7$$

$$-19$$

$$\begin{array}{cccc} & 17 & 16 & -34 & 34/2 \\ 17 \div 51 & \times 3 & \times 5 & \times 5 & \\ \div 3 & \overline{51} & \overline{80} & \overline{170} & \end{array}$$

$$\begin{cases} 2 \cdot 1 + 0 + (-1) = 1 \\ 1 - 3 \cdot 0 + 2 \cdot (-1) = -1 \\ 3 \cdot 1 + 0 - (-1) = 4 \end{cases}$$