

Raúl Rubí Hernández Floreano

Ejemplo.

$$3x_1 - 0.1x_2 - 0.2x_3 = 7.85$$

$$0.1x_1 + 7x_2 - 0.3x_3 = -19.3$$

$$0.3x_1 + 0.2x_2 + 10x_3 = 71.4$$

$$A_{ext} = \left[\begin{array}{ccc|c} 3 & -0.1 & -0.2 & 7.85 \\ 0.1 & 7 & -0.3 & -19.3 \\ 0.3 & 0.2 & 10 & 71.4 \end{array} \right]$$

Primer paso Fila 1 $\circ \frac{a_{21}}{a_{11}}$ o: Fila 1 $\circ \frac{0.1}{3}$

y lo resto de la fila 2

$$A_{ext} = \left[\begin{array}{ccc|c} 3 & -0.1 & -0.2 & 7.85 \\ 0 & 7.033 & -0.293 & -19.56 \\ 0.3 & 0.2 & 10 & 71.4 \end{array} \right]$$

$$\left(3 \cdot \frac{0.1}{3} - 0.1 \right) = 0$$

$$\left(-0.1 \cdot \frac{0.1}{3} \right) - 7 = 7.033$$

$$\left(-0.2 \cdot \frac{0.1}{3} \right) - 0.3 = -0.293$$

Segundo paso $\left(\text{Fila 1} \circ \frac{a_{31}}{a_{11}} \right) - \text{Fila 3}$

$$\left(3 \cdot \frac{0.3}{3} - 0.3 \right) = 0$$

Paola Rubí Hernández Floreano

$$\left(-0.1 \cdot \frac{0.3}{3} \right) - 0.2 = 0.21$$

$$\left(-0.2 \cdot \frac{0.3}{3} \right) - 10 = 10.02$$

$$A_{ext} = \left[\begin{array}{ccc|c} 3 & -0.1 & -0.2 & 7.85 \\ 0 & 7.033 & -0.293 & -19.56 \\ 0 & 0.21 & 10.02 & 70.61 \end{array} \right]$$

Multiplico la Fila 2 $\cdot \frac{0.21}{7.033}$ y resto de la fila 3

$$A_{ext} = \left[\begin{array}{ccc|c} 3 & -0.1 & -0.2 & 7.85 \\ 0 & 1 & -0.293 & -19.56 \\ 0 & 0 & 10.028 & 71.199 \end{array} \right]$$

$$\left(-0.293 \cdot \frac{0.21}{7.033} \right) - 10.02 = 10.028$$

$$70.61 - \left(\frac{0.21}{7.033} \cdot 19.56 \right) = 71.199$$

$$x_3 \approx \frac{71.199}{10.028} \approx 7.1$$

$$x_2 \approx \frac{19.56 + 0.293(7.1)}{7.033} \approx -2.48$$

$$x_1 \approx 7.85 - 0.2(7.1) - 0.1(-2.48) = 2.32$$

Raúl R. J. Hernández Flores

Ejemplo

$$\begin{aligned} 0.3x_1 + 0.52x_2 + x_3 &= -0.01 \\ 0.5x_1 + x_2 + 1.9x_3 &= 0.67 \\ 0.1x_1 + 0.3x_2 + 0.5x_3 &= -0.44 \end{aligned}$$

$$A = \begin{vmatrix} 0.3 & 0.52 & 1 \\ 0.5 & 1 & 1.9 \\ 0.1 & 0.3 & 0.5 \end{vmatrix} \quad X = \begin{bmatrix} x_1 \\ x_2 \\ x_3 \end{bmatrix} \quad b = \begin{bmatrix} -0.01 \\ 0.67 \\ -0.44 \end{bmatrix}$$

$$D = 0.3 \begin{vmatrix} 1 & 1.1 \\ 0.3 & 0.5 \end{vmatrix} - 0.5 \begin{vmatrix} 0.5 & 1.9 \\ 0.1 & 0.5 \end{vmatrix} + \begin{vmatrix} 0.5 & 1 \\ 0.1 & 0.3 \end{vmatrix}$$

$$D = 0.3(0.5 - 0.57) - 0.52(0.25 - 0.19) + (0.15 - 0.1)$$

$$D = -0.0022$$

$$X_1 = \begin{vmatrix} -0.01 & 0.52 & 1 \\ 0.67 & 1 & 1.9 \\ -0.44 & 0.3 & 0.5 \end{vmatrix} \quad \text{Se reemplaza } b \text{ en la columna deseada de } X_n.$$

$$-0.0022$$

$$X_1 = \frac{-0.01(0.5 - (0.3)(1.9)) + 0.52((0.67)(0.5) - (-0.44)(1.9))}{-0.0022} = \underline{\underline{0.03278}}$$

$$X_1 = \frac{0.03278}{-0.0022} = -14.9$$