MAT 335--Practice

Find the general solution for each of the following systems.

1. $$\begin{aligned} x + 2y - 3z &= 1 \\ 2x + 5y - 8z &= 4 \\ 3x + 8y - 13z &= 7 \end{aligned}$$

2. $$\begin{aligned} x + 2y - 4z &= -4 \\ 2x + 5y - 9z &= -10 \\ 3x - 2y + 3z &= 11 \end{aligned}$$

3. $$\begin{aligned} x + 2y - 3z &= -1 \\ -3x + y - 2z &= -7 \\ 5x + 3y - 4z &= 2 \end{aligned}$$

4. $$\begin{aligned} 2x_1 - 3x_2 + x_3 - x_4 &= 0 \\ x_1 - x_2 + x_3 - x_4 &= 1 \\ x_1 + x_2 - x_3 + x_4 &= 1 \end{aligned}$$

5. For the following matrices and vectors:

$$A_1 = \begin{bmatrix} 1 & 2 & 4 \\ 0 & 1 & 5 \\ -2 & -4 & -3 \end{bmatrix}, A_2 = \begin{bmatrix} 1 & 2 & 1 \\ -3 & -1 & 2 \\ 2 & -1 & -3 \end{bmatrix}, A_3 = \begin{bmatrix} 1 & 3 & 1 & 4 \\ -2 & -1 & 3 & -3 \\ 3 & 4 & -2 & 7 \end{bmatrix},$$

$$\mathbf{b}_1 = \begin{bmatrix} 1 \\ 4 \\ 3 \end{bmatrix}, \mathbf{b}_2 = \begin{bmatrix} -2 \\ 1 \\ 1 \end{bmatrix}, \mathbf{b}_3 = \begin{bmatrix} 3 \\ -3 \\ 4 \end{bmatrix}$$

Find the general solution for the system given by

a. $A_1\mathbf{x} = \mathbf{b}_1$

b. $A_2\mathbf{x} = \mathbf{b}_2$

c. $A_3\mathbf{x} = \mathbf{b}_3$