1) $3x + 4y + 3z = 10$

$x + 5y - 2z = 7$

$6x + 3y + 7z = 15$

$$\begin{bmatrix} 3 & 4 & 3 \\ 1 & 5 & -1 \\ 6 & 3 & 7 \end{bmatrix} = \begin{matrix} 10 \\ 7 \\ 15 \end{matrix}$$

$(-\frac{1}{3})$

$$\begin{bmatrix} 3 & 4 & 3 \\ 0 & \frac{11}{3} & -2 \\ 6 & 3 & 7 \end{bmatrix} = \begin{matrix} 10 \\ \frac{11}{3} \\ 15 \end{matrix}$$

-2

$$\begin{bmatrix} 3 & 4 & 3 \\ 0 & \frac{11}{3} & -2 \\ 0 & -5 & 1 \end{bmatrix} = \begin{matrix} 10 \\ \frac{11}{3} \\ -5 \end{matrix}$$

$\frac{15}{11}$

$$\begin{bmatrix} 3 & 4 & 3 \\ 0 & \frac{11}{3} & -2 \\ 0 & 0 & -\frac{19}{11} \end{bmatrix} = \begin{matrix} 10 \\ \frac{11}{3} \\ 0 \end{matrix}$$

$x_3 = 0$

$$x_2 = \frac{\left(\frac{11}{3} + 2x_3\right)}{\frac{11}{3}} = \frac{\frac{11}{3} + 2(0)}{\frac{11}{3}} = 1$$

$$x_1 = \frac{\left[10 - (4x_2 + 3x_3)\right]}{3} = \frac{10 - 4}{3} = 2$$

$$\begin{bmatrix} x_1 \\ x_2 \\ x_3 \end{bmatrix} = \begin{bmatrix} 2 \\ 1 \\ 0 \end{bmatrix}$$

Exercise 2

$$3x_1 + 4x_2 + 3x_3 = 10$$
$$x_1 + 5x_2 - x_3 = 7$$
$$6x_1 + 3x_2 + 7x_3 = 15$$

$$\begin{matrix} 3/4 \\ 1/5 \\ 6/7 \end{matrix}\begin{bmatrix} 3 & 4 & 3 \\ 1 & 5 & -1 \\ 6 & 3 & 7 \end{bmatrix} = \begin{matrix} 10 \\ 7 \\ 15 \end{matrix}$$

$S_f = [4, 5, 7]$

$I = [1, 2, 3]$

$I = [3, 2, 1]$

$$* \begin{bmatrix} 3 & 4 & 3 \\ 1 & 5 & -1 \\ 6 & 3 & 7 \end{bmatrix} = \begin{matrix} 10 \\ 7 \\ 15 \end{matrix}$$

$$\begin{matrix} 5/3 \\ 13/42 \\ * \end{matrix}\begin{bmatrix} 0 & 5/2 & -1/2 \\ 0 & 9/2 & -13/6 \\ 6 & 3 & 7 \end{bmatrix} = \begin{matrix} 5/2 \\ 9/2 \\ 15 \end{matrix}$$

$$* \begin{bmatrix} 0 & 5/2 & -1/2 \\ 0 & 0 & -19/15 \\ 6 & 3 & 7 \end{bmatrix} \begin{bmatrix} 5/2 \\ 0 \\ 15 \end{bmatrix}$$

Back Sub)

$$\frac{-19}{15} x_3 = 0 \qquad x_3 = 0$$

$$\frac{5}{2} x_2 - \frac{1}{2} x_3 = \frac{5}{2}$$

$$x_2 = \frac{\left(\frac{5}{2} + \frac{1}{2}(0)\right)}{\frac{5}{2}} = 1$$

$$x_1 = \frac{\left[15 - (3x_2 + 7x_3)\right]}{6} = \frac{\left[15 - (3(1) + 7(0)\right]}{6}$$

$$\frac{15-3}{6} = 2$$

$$x_1 = 2, \quad x_2 = 1 \quad x_3 = 0$$