$$-R_2$$

$$2R \begin{bmatrix} 1 & 1 & 2 & 5 \\ 0 & 1 & 1 & 7 \\ 0 & 0 & 0 & 0 \end{bmatrix}$$

$$x_1 + x_2 + 2x_3 = 5$$

$$x_2 + x_3 = 7$$

$$\boxed{x_3 = t}$$

$$\boxed{x_2 = 7 - t}$$

$$x_1 + 7 - t + 2t = 5$$

$$x_1 + t + 7 = 5$$

$$\boxed{x_1 = -t - 2}$$

$$\begin{bmatrix} x_1 \\ x_2 \\ x_3 \end{bmatrix} = \begin{bmatrix} -t - 2 \\ -t + 7 \\ t \end{bmatrix}$$

$$\begin{bmatrix} x_1 \\ x_2 \\ x_3 \end{bmatrix} = \begin{bmatrix} -2 \\ 7 \\ 0 \end{bmatrix} + t \begin{bmatrix} -1 \\ -1 \\ 1 \end{bmatrix}$$

The general Solution is