Name:

Give the solution set $x = \begin{pmatrix} x_1 \\ x_2 \\ x_3 \\ x_4 \\ x_5 \end{pmatrix} = \begin{pmatrix} \\ \\ \\ \\ \end{pmatrix} + x_5 \begin{pmatrix} \\ \\ \\ \\ \end{pmatrix}$ for the augmented matrix

$$\begin{pmatrix} 1 & 0 & 0 & 3 & 4 & 5 \\ 1 & 1 & 3 & 4 & 6 & 5 \\ 3 & 0 & 2 & 1 & 4 & 1 \\ 0 & 0 & 2 & 1 & 1 & 4 \end{pmatrix}$$

and fill in the row reduction gaps.

$$\begin{pmatrix} 1 & 0 & 0 & 3 & 4 & 5 \\ 0 & 1 & 3 & 1 & 2 & 0 \\ 0 & 0 & 2 & -8 & -8 & -14 \\ 0 & 0 & 2 & 1 & 1 & 4 \end{pmatrix} \begin{matrix} \text{row}_1 \\ \text{row}_2 \to \text{row}_2 + (-1\ \text{row}_1) \\ \text{row}_3 \to \text{row}_3 + (-3\ \text{row}_1) \\ \text{row}_4 \end{matrix}$$

$$\begin{pmatrix} 1 & 0 & 0 & 3 & 4 & 5 \\ 0 & 1 & 3 & 1 & 2 & 0 \\ 0 & 0 & 2 & -8 & -8 & -14 \\ 0 & 0 & 0 & 9 & 9 & 18 \end{pmatrix} \begin{matrix} \text{row}_1 \\ \text{row}_2 \\ \text{row}_3 \\ \text{row}_4 \to \text{row}_4 + (-1\ \text{row}_3) \end{matrix}$$

$$\begin{pmatrix} 1 & 0 & 0 & 3 & 4 & 5 \\ 0 & 1 & 3 & 1 & 2 & 0 \\ 0 & 0 & 2 & -8 & -8 & -14 \\ 0 & 0 & 0 & 1 & 1 & 2 \end{pmatrix} \begin{matrix} \text{row}_1 \\ \text{row}_2 \\ \text{row}_3 \\ \text{row}_4 \to \frac{1}{9}\ \text{row}_4 \end{matrix}$$

$$\begin{pmatrix} 1 & 0 & 0 & 0 & 1 & -1 \\ 0 & 1 & 3 & 0 & 1 & -2 \\ 0 & 0 & 2 & 0 & 0 & 2 \\ 0 & 0 & 0 & 1 & 1 & 2 \end{pmatrix} \begin{matrix} \text{row}_1 \to \text{row}_1 + (-3\ \text{row}_4) \\ \text{row}_2 \to \text{row}_2 + (-1\ \text{row}_4) \\ \text{row}_3 \to \text{row}_3 + (8\ \text{row}_4) \\ \text{row}_4 \end{matrix}$$

$$\begin{pmatrix} 1 & 0 & 0 & 0 & 1 & -1 \\ 0 & 1 & 3 & 0 & 1 & -2 \\ 0 & 0 & 1 & 0 & 0 & 1 \\ 0 & 0 & 0 & 1 & 1 & 2 \end{pmatrix} \begin{matrix} \text{row}_1 \\ \text{row}_2 \\ \text{row}_3 \to \frac{1}{2}\ \text{row}_3 \\ \text{row}_4 \end{matrix}$$

$$\begin{pmatrix} 1 & 0 & 0 & 0 & 1 & -1 \\ 0 & 1 & 0 & 0 & 1 & -5 \\ 0 & 0 & 1 & 0 & 0 & 1 \\ 0 & 0 & 0 & 1 & 1 & 2 \end{pmatrix} \begin{matrix} \text{row}_1 \\ \text{row}_2 \to \text{row}_2 + (-3\ \text{row}_3) \\ \text{row}_3 \\ \text{row}_4 \end{matrix}$$