

Name: \_\_\_\_\_ Fill in all the gaps

For the AM  $\begin{pmatrix} 1 & 0 & 0 & 3 & 4 & 5 \\ 1 & 1 & 3 & 4 & 6 & 5 \\ 3 & 0 & 2 & 1 & 4 & 1 \\ 0 & 0 & 2 & 1 & 1 & 4 \end{pmatrix}$  the sol is  $x = \begin{pmatrix} x_1 \\ x_2 \\ x_3 \\ x_4 \\ x_5 \end{pmatrix} = \begin{pmatrix} \phantom{x_1} \\ \phantom{x_2} \\ \phantom{x_3} \\ \phantom{x_4} \\ \phantom{x_5} \end{pmatrix} + x_5 \begin{pmatrix} \phantom{x_1} \\ \phantom{x_2} \\ \phantom{x_3} \\ \phantom{x_4} \\ \phantom{x_5} \end{pmatrix}$

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

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

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

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

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

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


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