

ID: \_\_\_\_\_

Name: Salm Fill in all the gaps

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

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

 $x_3$  free

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

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

$$\begin{array}{l} x_1 = 1 \\ x_2 = 1 - 3x_3 \\ x_3 = x_3 \quad x_4 = 1 \end{array}$$