

1. (1 point) Are the following matrices invertible?

☐ 1.  $\begin{bmatrix} -4 & -2 \\ -3 & -3 \end{bmatrix}$

☐ 2.  $\begin{bmatrix} 30 & -5 \\ 0 & 0 \end{bmatrix}$

☐ 3.  $\begin{bmatrix} -6 & -5 \\ 30 & 25 \end{bmatrix}$

☐ 4.  $\begin{bmatrix} -1 & -4 \\ 5 & -4 \end{bmatrix}$

2. (1 point) If

$$A = \begin{bmatrix} -2 & 0 \\ 0 & 7 \end{bmatrix},$$

then

$$A^{-1} = \begin{bmatrix} \_\_\_ & \_\_\_ \\ \_\_\_ & \_\_\_ \end{bmatrix}.$$

3. (1 point) Are the following matrices invertible?

☐ 1.  $\begin{bmatrix} 1 & 6 & 3 \\ 0 & -2 & 4 \\ -1 & -12 & 9 \end{bmatrix}$

☐ 2.  $\begin{bmatrix} 1 & 4 & -5 \\ 0 & 0 & -2 \\ -1 & 5 & 3 \end{bmatrix}$

4. (1 point) If

$$A = \begin{bmatrix} -3 & 0 & 0 \\ 0 & 4 & 0 \\ 0 & 0 & -2 \end{bmatrix},$$

then

$$A^{-1} = \begin{bmatrix} \_\_\_ & \_\_\_ & \_\_\_ \\ \_\_\_ & \_\_\_ & \_\_\_ \\ \_\_\_ & \_\_\_ & \_\_\_ \end{bmatrix}.$$

5. (1 point) If

$$A = \begin{bmatrix} 4 & 4 & 9 \\ 0 & -6 & 9 \\ 0 & 0 & -1 \end{bmatrix},$$

then

$$A^{-1} = \begin{bmatrix} \_\_\_ & \_\_\_ & \_\_\_ \\ \_\_\_ & \_\_\_ & \_\_\_ \\ \_\_\_ & \_\_\_ & \_\_\_ \end{bmatrix}.$$

6. (1 point) If

$$A = \begin{bmatrix} -1 & -1 & 0 \\ -1 & -2 & -1 \\ 0 & -1 & 0 \end{bmatrix},$$

then

$$A^{-1} = \begin{bmatrix} \_\_\_ & \_\_\_ & \_\_\_ \\ \_\_\_ & \_\_\_ & \_\_\_ \\ \_\_\_ & \_\_\_ & \_\_\_ \end{bmatrix}.$$

7. (1 point) If

$$A = \begin{bmatrix} -5 & 2 \\ 7 & -1 \end{bmatrix},$$

then

$$A^{-1} = \begin{bmatrix} \_\_\_ & \_\_\_ \\ \_\_\_ & \_\_\_ \end{bmatrix}.$$

Given  $\vec{b} = \begin{bmatrix} 1 \\ 1 \end{bmatrix}$ , solve  $A\vec{x} = \vec{b}$ .

$$\vec{x} = \begin{bmatrix} \_\_\_ \\ \_\_\_ \end{bmatrix}.$$

8. (1 point) If

$$A = \begin{bmatrix} 5 & -10 & -21 \\ 1 & -1 & -1 \\ 1 & -2 & -4 \end{bmatrix},$$

then

$$A^{-1} = \begin{bmatrix} \_\_\_ & \_\_\_ & \_\_\_ \\ \_\_\_ & \_\_\_ & \_\_\_ \\ \_\_\_ & \_\_\_ & \_\_\_ \end{bmatrix}.$$

Given  $\vec{b} = \begin{bmatrix} 0 \\ 5 \\ -1 \end{bmatrix}$ , solve  $A\vec{x} = \vec{b}$ .

$$\vec{x} = \begin{bmatrix} \_\_\_ \\ \_\_\_ \\ \_\_\_ \end{bmatrix}.$$

9. (1 point) The matrix  $\begin{bmatrix} 6 & 7 \\ -9 & k \end{bmatrix}$  is invertible if and only if  $k \neq \_\_\_$ .