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 $k \neq$ __.