Linear Algebra **Worksheet 1** Name:

1. Which of the following is true for $A = \begin{bmatrix} 0 & 1 & 1 & 1 & 1 \\ 0 & 0 & 1 & 1 & 1 \\ 0 & 0 & 0 & 0 & 1 \\ 0 & 0 & 0 & 0 & 0 \end{bmatrix}$?

   A. Reduced row echelon form.

   B. Row Echelon form.

   C. None.

2. Solve the following linear system by Gauss-Jordan Elimination Method.

$$\begin{cases} x_1 - 2x_2 - 2x_3 + 2x_4 = 0 \\ -x_1 - 2x_2 + x_4 = 1 \\ 2x_1 - 4x_2 - 4x_3 + 4x_4 = 3 \end{cases}$$

3. Solve the following linear system by Gauss-Jordan Elimination Method.

$$\begin{cases} x + y + 2z + 2w = 3 \\ x + 2y + z + 2w = 1 \\ -2x - 2y - 4z - 4w = -6 \end{cases}$$

4. Solve the following linear system by Gauss-Jordan Elimination Method.

$$\begin{cases} 4x + 4y = 4 \\ 3x + y = 1 \\ 2x + y = 1 \\ 4x + 3y = 3 \end{cases}$$

5. Solve the following linear system by Gauss-Jordan Elimination Method.

$$\begin{cases} -x_1 + 3x_2 = -1 \\ 3x_1 - 4x_2 = -1 \\ -3x_1 + 2x_2 = 4 \\ -9x_1 + 6x_2 = -3 \end{cases}$$

6. Solve the following linear system by Gauss-Jordan Elimination Method.

$$\begin{cases} -x_1 + 2x_2 = -1 \\ x_1 - 2x_2 = 1 \\ 3x_1 - 6x_2 = 3 \\ -4x_1 + 8x_2 = -4 \end{cases}$$

7. Solve the following linear system by Gauss-Jordan Elimination Method.

$$\begin{cases} -3x_4 = 2 \\ -2x_1 - 4x_3 + 4x_4 = 1 \\ 2x_1 - x_2 + 4x_3 - 3x_4 = -1 \end{cases}$$

8. Solve the following linear system by Gauss-Jordan Elimination Method.

$$\begin{cases} x_1 - x_2 = 0 \\ -2x_2 - 2x_3 = 0 \\ - x_2 - x_3 = 0 \end{cases}$$

9. Solve the following linear system by Gauss-Jordan Elimination Method.

$$\begin{cases} x_1 + 2x_2 - 3x_3 = 0 \\ 2x_1 + 4x_2 - 6x_3 = 0 \\ -3x_1 - 6x_2 + 9x_3 = 0 \end{cases}$$