Math 122-002 201730
Practice Assignment # 2

1. Solve by Gauss-Jordan elimination.

(a)
$$\begin{cases} 2x_1 + 2x_2 + 2x_3 = 0 \\ -x_1 + 5x_2 + 2x_3 = 1 \\ 8x_1 + x_2 + 4x_3 = -1 \end{cases}$$

(b)
$$\begin{cases} -2b + 3c = 1 \\ 3a + 6b - 3c = -2 \\ 6a + 6b + 3c = 5 \end{cases}$$

(c)
$$\begin{cases} 2x_1 + 2x_2 + 2x_3 + 4x_4 = 0 \\ -x_1 + 5x_2 + 2x_3 = 1 \\ 8x_1 + x_2 + 4x_3 + 2x_4 = -1 \end{cases}$$

2. Solve the same three systems from the previous question by Gaussian elimination.

3. Without solving the system ("by inspection"), determine whether each homogeneous system has nontrivial solutions

(a)
$$\begin{cases} 2x_1 + 2x_2 + 2x_3 + 5x_4 = 0 \\ -x_1 + 5x_2 + 2x_3 - 6x_4 = 0 \\ 8x_1 + x_2 + 4x_3 + 1000x_4 = 0 \end{cases}$$

(b)
$$\begin{cases} x_1 + 5x_2 - 2x_3 = 0 \\ 5x_2 + 8x_3 = 0 \\ 2x_3 = 0 \end{cases}$$

(c)
$$\begin{cases} 2x_1 + 2x_2 = 0 \\ -x_1 - x_2 = 0 \end{cases}$$