

**Problem 1 - 2 Points**

Write the following linear system as an augmented matrix

$$\begin{aligned}x_1 + x_2 + 3x_3 &= 3 \\2x_1 + 2x_2 - x_3 &= -1 \\x_1 + 3x_2 + 5x_3 &= -5\end{aligned}$$

**Problem 2 - 4 Points**

Row reduce the above augmented matrix to solve for the system. (Make sure to plug in the numbers at the end to make sure they work!)

**Problem 3 - 4 Points**

Consider the following augmented matrix

$$\begin{bmatrix} 1 & 2 & 4 & 3 \\ 0 & a & 1 & 6 \\ 0 & b & 2 & 4 \end{bmatrix}$$

Suppose that this augmented system is consistent. What can you say about  $a, b$ ?