

## MATH 4305 - Homework 1 - Due 9/27

**Problem 1 (5 points):** Solve the system

$$-x_2 + x_3 = 1$$

$$x_1 + 2x_2 + x_4 = 2$$

$$x_1 - x_2 + 3x_3 + x_4 = 5$$

**Problem 2 (5 points):** Find the projection of  $x$  onto the line

$$\text{span} \left\{ \begin{bmatrix} 1 \\ 2 \end{bmatrix} \right\}$$

**Problem 3 (5 points):** Find the inverse, if possible, of

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