MA 232-22F **Problem Session 2**

Name:

1. Let $A = \begin{bmatrix} 1 & 3 & 0 & 2 & -1 \\ 0 & 0 & 1 & 4 & -3 \\ 1 & 3 & 1 & 6 & -4 \end{bmatrix}$. Find the nullspace and column space of A.

2. Construct a matrix whose column space contains $(1, 1, 5)$ and $(0, 3, 1)$, and whose nullspace contains $(1, 1, 2)$.

3. Under what condition on b_1, b_2, b_3 is this system solvable? Find the general solution $\mathbf{x}$, when that condition holds. Express it as $\mathbf{x} = \mathbf{x_p} + \mathbf{x_n}$.

$$\begin{array}{rrrl} x & +2y & -2z & = b_1 \\ 2x & +5y & -4z & = b_2 \\ 4x & +9y & -8z & = b_3 \end{array}$$