MA 371 12/3/03 Quiz 9. **NAME:**

1. Determine whether or not the vectors $v_1 = (1, 1, 2), v_2 = (-1, 0, 1), v_3 = (1, 1, 1)$ form a basis for $\mathcal{R}^3$.

2. Find the matrix A such that the vectors $v_1 = (1, 1, 0, 2), v_2 = (-2, 0, 1, -1)$ form a basis for $null(A)$.

3. Let $A = \begin{pmatrix} 1 & 0 & 1 \\ 2 & -1 & 2 \\ 1 & 1 & 1 \\ 0 & -1 & -1 \end{pmatrix}$

   (a) Find a basis for $row(A)$.

   (b) Find a basis for $col(A)$.

4. Let W be the space spanned by $v_1 = (1, 0, 0, 2, 5), v_2 = (0, 1, 0, 3, 4), v_3 = (0, 0, 1, 4, 7), v_4 = (2, -3, 4, 11, 12)$. Find bases for W and $W^{\perp}$.

5. Enlarge the set $\{v_1, v_2\}$ (from previous problem) to form a basis for $\mathcal{R}^5$.

6. Sec. 7.5 #5,6.