Name: _____

Directions: Show all work. No credit for answers without work.

1. **[3 points]** Give an example of a 3-dimensional subspace of P, the vector space of all polynomials.

2. Let $A = \begin{bmatrix} 1 & 3 & 1 & 1 & -2 \\ 2 & 6 & 3 & 4 & -3 \\ 3 & 9 & 1 & -1 & -8 \end{bmatrix}$.

   (a) **[6 points]** Find bases for the row space, the column space, and the null space of A. *Clearly* indicate which basis is for which space.

   (b) **[1 point]** Find the rank of A and the nullity of A.