

Name:

1. Let  $V$  be the real vector space of all polynomials of degree 7 or less. Let  $W$  be the set of all polynomials  $p$  in  $V$  such that  $p(4) = 0$ , which is a subspace of  $V$ . For each of the following statements, write the word “true” or “false.”

(a) Any basis for  $W$  can be extended to a basis for  $V$ .

(b) Any basis for  $V$  has some subset which is a basis for  $W$ .

2. Find a basis for the null space of the following matrix.

$$\begin{pmatrix} 2 & 3 & 2 & 2 \\ 4 & 3 & 3 & 4 \end{pmatrix}$$