

*It is my experience that proofs involving matrices can be shortened by 50% if one throws the matrices out.*

Name and section: \_\_\_\_\_

1. (5 points) Compute the rank of  $A = \begin{bmatrix} 1 & -3 & 5 & 3 \\ -3 & 4 & -6 & -8 \\ 0 & -5 & 9 & 1 \end{bmatrix}$ . What can you conclude about the dimension of the null space of  $A$ ?

2. (5 points) Compute the determinant of  $B = \begin{bmatrix} 1 & -2 & 1 & 3 \\ 3 & -3 & 4 & 5 \\ 0 & 2 & -1 & -1 \\ -4 & 9 & -4 & -8 \end{bmatrix}$ . Is  $B$  invertible?