

*Civilization advances by extending the number of important operations which we can perform without thinking about them.*

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

1. (5 points) Find a basis of the column space and a basis of the null space of  $A = \begin{bmatrix} 2 & 2 & 2 & -2 \\ -3 & -7 & 5 & -9 \\ 1 & 3 & -3 & 5 \end{bmatrix}$ .

2. (5 points) Compute the determinant of  $B = \begin{bmatrix} -3 & -2 & 5 & 7 \\ 2 & 0 & 4 & 0 \\ -1 & 0 & 0 & 5 \\ 3 & 0 & 5 & 3 \end{bmatrix}$ . Is  $B$  invertible?