

Name \_\_\_\_\_

1) Row reduce the matrix below until it is in reduced echelon form. Show your work.

$$\begin{bmatrix} 3 & 6 & 18 & 0 \\ 2 & 4 & 8 & 16 \\ 1 & 2 & 4 & 8 \end{bmatrix}$$

2) Assume the matrix  $A$  is an invertible  $5 \times 5$  matrix. How many solutions does the matrix equation below have?

$$A \begin{bmatrix} x_1 \\ x_2 \\ x_3 \\ x_4 \\ x_5 \end{bmatrix} = \begin{bmatrix} 0 \\ 0 \\ 0 \\ 4 \\ 7 \end{bmatrix}$$

3) Find the length of the vector below.

$$\begin{bmatrix} 0 \\ 0 \\ 3 \\ 4 \end{bmatrix}$$