This quiz is worth 10 points. Name: _____

1. (3 points) Perform elementary row operations on the matrix below to obtain a matrix in reduced row echelon form. For full points, you need to state explicitly what row operations you are performing. Note that you don't need more than three steps.

$$\begin{bmatrix} 1 & 0 & 4 & 16 \\ 0 & 1 & 2 & 2 \\ 0 & 2 & 5 & 7 \end{bmatrix}$$

2. (3 points) The system of equations $S = \begin{cases} w - 2x - 6y - 2z = -1 \\ x + 3y + 2z = 0 \\ 2w - x - 3y + 2z = -2 \end{cases}$ has augmented matrix $A = \begin{bmatrix} 1 & -2 & -6 & -2 & -1 \\ 0 & 1 & 3 & 2 & 0 \\ 2 & -1 & -3 & 2 & -1 \end{bmatrix}$. Use the reduced row echelon form of the matrix A, given below, to solve the system of equations S.

$$rref(A) = \begin{bmatrix} 1 & 0 & 0 & 2 & -1 \\ 0 & 1 & 3 & 2 & 0 \\ 0 & 0 & 0 & 0 & 0 \end{bmatrix}$$

3. (4 points) Let $a = (1, 0, 1)$ and $x = (x_1, x_2, x_3, x_4, x_5)$. Find $a * x$, the convolution of a and b.