Math 3160 - Quiz 6

Name:_____

1. For the linear transformation from $\mathbb{R}^n \to \mathbb{R}^m$ defined by the matrix A.

$$A = \begin{bmatrix} 1 & 0 & 1 & 1 \\ 1 & 1 & 0 & 0 \\ 0 & 2 & -1 & -1 \end{bmatrix}$$

   (a) What are n and m?
   (b) Compute the column space.
   (c) Compute the null space.
   (d) Compute rank.
   (e) Compute nullity.

   item For the linear transformation from $\mathbb{R}^n \to \mathbb{R}^m$ defined by the matrix A.

$$A = \begin{bmatrix} 1 & 1 & 0 \\ 0 & 1 & 1 \\ 1 & 0 & -1 \\ 1 & 0 & -1 \end{bmatrix}$$

   (a) What are n and m?
   (b) Compute the column space.
   (c) Compute the null space.
   (d) Compute rank.
   (e) Compute nullity.

2. For the linear transformation $T : \mathbb{R}^n \to \mathbb{R}^m$ $T(\begin{bmatrix} x \\ y \\ z \end{bmatrix}) = \begin{bmatrix} x+y \\ y+z \\ x-z \end{bmatrix}$.

   (a) What are n and m?
   (b) Compute the column space.
   (c) Compute the null space.
   (d) Compute rank.
   (e) Compute nullity.