Math 308 E, Spring 2018 quiz 4

You have 3 minutes to complete the quiz. This quiz is out of 10 points.

Name:			
ranic.			

Consider the matrix

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

Let $T: \mathbb{R}^4 \to \mathbb{R}^4$ be the linear transformation given by T(x) = Ax.

1. (3 points) Is the vector
$$v = \begin{bmatrix} 1 \\ 0 \\ -1 \\ 0 \end{bmatrix}$$
 in the null space of A ?

2. (3 points) Give any vector other than 0 in the range of A.

3. (4 points) Explain what it means for three vectors $\{u, v, w\}$ in \mathbb{R}^4 to be a basis for a subspace S of \mathbb{R}^4 .

4. (+2 extra credit) What is the dimension of range(A)?