Linear Algebra
Quiz 4

Name:_____

You have 10 minutes to complete this quiz. If you have a question raise your hand and remain seated. In order to receive full credit your answer must be **complete**, **legible** and **correct**. Show your work, and give adequate explanations.

1. Let V be a real vector space. What does it mean to say that a subset $X \subseteq V$ is linearly dependent?

X is linearly dependent if there are vectors $\mathbf{x}_1, \ldots, \mathbf{x}_k \in X$ and real numbers $c_1, \ldots, c_k \in \mathbb{R}$ such that $c_1\mathbf{x}_1 + \cdots + c_k\mathbf{x}_k = \mathbf{0}$ and at least one c_i is not equal to 0.

2. Give an example of a vector space V and a linearly dependent subset $X \subseteq V$.

$V = \mathbb{R}^2$ and $X = \left\{ \begin{bmatrix} 1 \\ 0 \end{bmatrix}, \begin{bmatrix} 0 \\ 1 \end{bmatrix}, \begin{bmatrix} 1 \\ 1 \end{bmatrix} \right\}$.