Math 4377
February 8, 2019 Homework 4 Name _____

1. Let V and W be vector spaces, and let $T : V \to W$ be linear. Suppose $\{\mathbf{v}_1, \cdots, \mathbf{v}_p\}$ is a linearly dependent subset of V. Prove that $\{T(\mathbf{v}_1), \cdots, T(\mathbf{v}_p)\}$ is a linearly dependent subset of W.

2. If $T : \mathbb{R}^2 \to \mathbb{R}^3$ is linear and $T(1,1) = (1,2,2)$, $T(2,3) = (2,-1,2)$, find:
   (a) $T(1,0)$ and $T(0,1)$
   (b) $T(x,y)$ for any real numbers x and y.