Math 324 Homework 10
YOUR NAME
Due 5/13/20

Submit well-organize solutions to the following exercises You may work together however you MUST NOT copy one another. Your final submission MUST be written in your own words. It is unacceptable and unethical to look up the answers online.

1. List the names of all people (students, TA's, Professors) with whom you spoke about this assignment. There are no restrictions for how many people you spoke to and no negative repercussions to just chatting. **You're encouraged to fill this space up. name 1, name 2, ...

2. **Section 6.1 Exercise 79**
   Let $S = \{\vec{v}_1, \vec{v}_2, \ldots, \vec{v}_n\}$ be a set of linearly dependent vectors in V, and let $T : V \to W$ be a linear transformation. Prove that $S' = \{T(\vec{v}_1), T(\vec{v}_2), \ldots, T(\vec{v}_n)\}$ is a linearly dependent set of vectors in W.

   Proof. Let V and W be vector spaces. Let $S = \{\vec{v}_1, \vec{v}_2, \ldots, \vec{v}_n\}$ be a set of linearly dependent vectors in V and $T : V \to W$ be a linear transformation. Let $S' = \{T(\vec{v}_1), T(\vec{v}_2), \ldots, T(\vec{v}_n)\}$. $\square$

3. **Section 6.2 Exercise 66**
   Let $T : V \to W$ be a linear transformation and let U be a subspace of W. Prove that the set $T^{-1}(U) = \{\vec{v} \in V : T(\vec{v}) \in U\}$ is a subspace of V.

   Proof. Let V and W be vector spaces and $T : V \to W$ be a linear transformation. Let U be a subspace of W. $\square$