

Math 324 Homework 8  
YOUR NAME  
Due 4/22/2020

Submit well-organized 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. Prove that if  $S = \{\vec{u}, \vec{v}\}$  where  $\vec{u}$  and  $\vec{v}$  are vectors in  $\mathbb{R}^2$  that are not scalar multiples of one another, then  $\text{span}(S) = \mathbb{R}^2$ .

(Hint: If they aren't scalar multiples of one another, what do you know about the matrix  $[\vec{u} \ \vec{v}]$ ?)

*Proof.* WORDSSSSSS

□

3. Let  $S = \{\vec{u}, \vec{v}, \vec{w}\}$  be a linearly independent set. Prove that  $T = \{\vec{u}, \vec{u} + \vec{v}, \vec{u} + \vec{v} + \vec{w}\}$  is also linearly independent.

*Proof.* MORE WORDSSSSSS

□

4. Let  $S = \{\vec{v}_1, \vec{v}_2, \dots, \vec{v}_k\}$  be a spanning set for a vector space  $V$ . Prove that if  $\vec{v}_k$  can be written as a linear combination of  $\vec{v}_1, \vec{v}_2, \dots, \vec{v}_{k-1}$ , then  $T = \{\vec{v}_1, \vec{v}_2, \dots, \vec{v}_{k-1}\}$  is also a spanning set for  $V$ .

*Proof.* MORE MORE WORDSSSSSS

□