MAD 5196, Fall 21
Homework 2

Instructions: Write solutions to the problems below.

Submitting: You will upload your solutions on the Canvas page; please follow the specific instructions from the first homework assignment. Your solutions should be uploaded to Canvas by **11:59pm on 9/24/21**. A random subset of the problems will be graded in detail.

Collaboration and Other Resources: You are encouraged to collaborate on homework with your classmates, but you need to write up your own solutions in your own words. Please see the specific guidelines for collaboration provided in the first homework assignment.

1 Problems

The numbers below refer to problems are from our textbook. I've included some remarks/clarifications/hints for some of them. I've also included some additional questions which are not from the textbook.

1. Problem 2.11

2. Problem 2.12

3. Problem 2.13

4. Problem 2.14

5. Problem 2.16, parts c, d and e.

6. Problem 2.17

7. Problem 2.19. The term *endomorphism* is just a fancy word for "linear transformation from a vector space to itself".

8. Problem 2.20

9. Let $V = (\mathcal{V}, +, \cdot)$ be a vector space and let $\mathcal{B} = \{\vec{v}_1, \ldots, \vec{v}_k\}$ be a finite collection of vectors. Recall that $\text{span}[\mathcal{B}]$ denotes the set of all linear combinations of elements of $\mathcal{B}$. Show that $\text{span}[\mathcal{B}]$ is a subspace of V.

Note: This problem was from our in-class worksheet. Please write up your solution and hand it in.