HOMEWORK 2
MATH H54

Office Hours: I will be out of town from Friday, September 6th to Wednesday, September 11th, and from Thursday, September 12th afternoon to Monday, September 16th. So my office hours on September 10th and 11th are cancelled. Please feel free to reach me by email.

Submit your homework at the beginning of the discussion section on Wednesday. *Late homework will not be accepted under any circumstances.*

You are encouraged to discuss the problems with your classmates, but you must write your solutions on your own and acknowledge collaborators/cite references if any.

Write clearly! Mastering mathematical writing is one of the goals of this course.

You have to staple your work if it is more than one page.

The following exercises are from the corresponding sections of the UC Berkeley custom edition of Lay, Nagle, Saff, Snider, *Linear Algebra and Differential Equations*. Note that the section numbers and problem numbers may not be the same as in Lay, *Linear Algebra*.

Due September 11:

- **Exercise 1.4:** 16, 32, 34
- **Exercise 1.5:** 14, 38, 40
- **Exercise 1.7:** 6, 32-38 (32, 33, ..., 38)
- **Exercise 1.8:** 18, 24, 26, 31, 34
- **Exercise 1.9:** 16, 22, 28, 35, 36
- **Additional Problem:** Prove that $\{\vec{v_1}, \vec{v_2}, \vec{v_3}, \vec{v_4}\}$ in $\mathbb{R}^5$ is linearly independent if $\{\vec{v_1}, \vec{v_2}, \vec{v_3}\}$ is linearly independent and $\vec{v_4}$ is not in $\text{span}\{\vec{v_1}, \vec{v_2}, \vec{v_3}\}$. (Hint: Suppose there is $a_1\vec{v_1} + a_2\vec{v_2} + a_3\vec{v_3} + a_4\vec{v_4} = \vec{0}$. Consider the two cases $a_4 = 0$ and $a_4 \neq 0$.)