Math 19620/20 Homework 6
Due: Thursday, November 15, 2018, at **5:00pm** in my mailbox in the basement of Eckhart (You can also give it to me in class on Thursday if you prefer.)

Please present your solutions clearly and in an organized way. Think of it this way: if you show it to another student in this class, he/she should be able to understand it without needing to ask you questions.

November 8

Goals:

- understand kernel and image, and how to find their dimensions
- understand how to use different coordinates, and how to interpret matrices with respect to different coordinates

Exercises 3.3:

- 38

Exercises 3.4:

- 1, 3, 5, 13, 15. Remember you can use calculators.

Exercise not from the textbook: (Don't forget to do this!)

- Let $T : \mathbb{R}^2 \to \mathbb{R}^2$ be the transformation which reflects points about the line with angle θ with respect to the x-axis. Using the same method as in lecture today, find the matrix for T. (See the example in page 78 of the lecture notes. You could also look at Section 3.4, Examples 3 and 5.)

November 13

Goals:

- find the orthogonal projection onto a subspace, given an orthonormal basis for that subspace

Exercises 5.1:

- 10, 27

Exercises 5.3:

- 69