

# Ninth Homework Assignment for Math 232 (D200)

**Due: Wednesday, November 21st.**

All section references are to the Lay text.

Problems to hand in:

- Section 5.2 problems 12, 18
- Section 5.3 problems 4, 12, 26, 30
- Section 5.4 problems 2, 4, 10
- Section 6.1 problem 10

Some other problems you might try:

Section 5.3, questions 21 and 22 and Section 5.4 questions 19 through 24 (which are short algebraic proofs).

Reading for this week:

- For Friday, Section 5.4.
- For Monday, Section 6.1.
- For Wednesday, Section 6.2.

(Optional) Section 5.5 points out that matrices can have complex eigenvalues. Section 5.6 has applications of eigenvalues to understanding the long term behaviour of ecological systems, this extends Section 1.10, and also 4.8 and 4.9 (which we did not cover). Section 5.7 shows one way that eigenvalues are used in solving differential equations, which arise in many applications. Section 5.8 discusses a practical method of approximating the eigenvalues and vectors when they can't be calculated exactly (e.g. for large matrices).