

# Math 211

## Algebraic Methods

### Course Guidelines

**Main Aim:** To *learn how to solve* various types of equations efficiently.

- computational (can often be done by a computer program (MAPLE))

**Secondary Aim:** To *understand why* the methods actually work.

- theoretical (usually involves proofs).

#### Guidelines for Proofs:

- **Types:**
  1. “Straightforward”: uses the definitions and (simple) properties of the concepts involved
  2. “Ingenious”: requires an idea (or a “trick”); cf. Euclid’s Lemma.
- **Steps** for writing up a proof:
  1. Discovering the proof
  2. Communicating the proof
- **Strategies** for *discovering* a proof:
  1. Review the definitions and properties of the concepts involved
  2. “Translate” the hypotheses and the conclusion into mathematical symbols (or language)
  3. Try a numerical example (if applicable)
- **Strategies** for *communicating* a proof:
  1. Express your ideas *clearly* to the reader (marker). Writing complete sentences often helps to achieve this goal.
  2. Explain the steps of your proof in an orderly and logical fashion.
  3. Be concise. Do not include information that is not relevant to the solution of the problem.