MATH1060: Midterm 3 Study Guide

The following is an overview of the material that will be covered on the third exam.

§5.3 Solving Trigonometric Equations

- Finding solutions to trig equations in the interval $[0, 2\pi)$.
- Finding all the solutions to a given trig equation.
- Using any of the following techniques to solve trig equations:
  - Collecting like terms
  - Extracting square roots
  - Factoring
  - Rewriting with a single trigonometric function
  - Squaring and converting to quadratic type
- Solving trig equations involving multiple angles.
- Using inverse trig functions.

§5.4 Sum and Difference Formulas

- Evaluating a trig function using sum/difference formulas.
- Solving trig equations using sum/difference formulas.
- Proving a cofunction identity.

§5.5 Multiple-Angle and Product-to-Sum Formulas

- Solving a trig equation involving multiple angles.
- Evaluating a trig expression using multiple-angle or product-to-sum formulas.
- Deriving a triple angle formula.
- Reducing powers in a trig expression.
- Using sum-to-product and product-to-sum formulas.

§6.1 Law of Sines

- Solving a triangle using the law of sines (AAS or ASA).
- Solving a triangle using the law of sines given SSA. This is the ambiguous case where there can be either 0, 1, or 2 triangles satisfying the given conditions. Know how to tell which is the case and be able to find all the possible solutions.
- Finding the area of an oblique triangle ($A = \frac{1}{2}bc\sin\alpha$).

§6.2 Law of Cosines

- Solving a triangle using the law of cosines (SSS or SAS).
- Using Heron's Formula to find the area of a triangle.

§6.3 Vectors in the Plane

- Finding the component form of a vector, given initial and terminal points.
- Finding the magnitude of a vector, given its component form.
- Adding vectors and scalar multiplication.
- Finding a unit vector that points in the direction of a given vector.
- Writing a vector as a linear combination of the standard unit vectors.
- The remainder of §6.3 (i.e., page 424-426) will not be covered on the exam.