MATH1060: Midterm 1 Study Guide

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

§4.1 Radian and Degree Measure

- Converting between radians and degrees.
- Computing lengths of arcs of circles.
- Computing the area of a sector.

§4.2 Trigonometric Functions

- Definitions of the six fundamental trigonometric functions.
- Values of the fundamental trig functions on the unit circle.
- Know the unit circle.
- Seriously, know the unit circle.
- The period of sine, cosine, and tangent.
- Know which trig functions are even/odd.

§4.3 Right Angle Trigonometry

- Common Pythagorean triples, e.g. $(3, 4, 5), (5, 12, 13), (8, 15, 17), (7, 24, 25)$.
- Evaluating trig functions for acute angles in a right triangle (SOHCAHTOA).
- The reciprocal, quotient, and Pythagorean identities.
- Know the Pythagorean identity: $\sin^2\theta + \cos^2\theta = 1$.
- Simplifying expressions using identities.
- Applications involving right triangles.

§4.4 Trigonometric Functions of Any Angle

- Evaluate trig functions for a central angle in a circle of any radius.
- Evaluate trig functions using identities.
- Finding θ when given $\sin\theta$ (or some other trig function evaluated at θ) and the quadrant in which θ lies.
- Finding an angle when given the value of two trig functions.

§4.5 Graphs of Sine and Cosine Functions

- Graph functions of the form $f(x) = a \cdot \sin(b(x - c)) + d$.
- Know how the constants a, b, c, and d affect the function.