Study Topics for Calculus 1 (Math 140 or 145)

recommended to students completing Math 130

Algebra

- Solving quadratic equations.
- Absolute value.
- Rules of exponents.

Geometry

- Geometric relationships and formulas.

Functions

- Completing the square of a quadratic function given in general form.
- Rational functions.
- Polynomial functions and their roots.

Logarithms and Exponentials

- Definition of the Logarithm; finding logarithms of given numbers.
- The compostion of logarithm and exponent functions with the same base.
- Rules of logarithms.
- Change of base.
- Graphing logarithmic and exponential functions.
- Solving logarithmic and exponential equations.

Trigonometry

- Right-triangle trig ratios and their relationships and properties.
- Conversion between radian and degree measure; the formula for the length of an arc of a circle.
- Angular and linear rotational velocity.
- Evaluating trig functions without a calculator (especially special angles between 0 and 2π).
- Graphing the trig functions, especially sine, cosine, tangent, and cotangent.
- Important identities for circular trig functions: odd/even, complementary, supplementary, add 2π, etc.
- Other identities for circular trig functions: add or subtract π, add or subtract $\pi/2$.
- The sum and difference and double and half-angle identites for sine and cosine.
- Verifying trigonometric identities.
- The inverse trig functions for sine, cosine, and tangent: evaluate and graph.
- Solving trigonometric equations: algbraically, graphically, and on the unit circle.
- The Law of Cosines.