# Calculus 1, Chapter 1 Study Guide
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The following is a *brief* list of topics covered in Chapter 1 of *Thomas' Calculus.* Test questions will be chosen directly from the text. This list is not meant to be comprehensive, but only gives a list of several important topics. I reserve the right to ask you definitions and theorems on the tests. If I do so, then I will choose from the **bold-faced** items below.

**1.1 Functions and Their Graphs.** Function, independent variable, dependent variable, domain, range, vertical line test, graph, piecewise defined functions, greatest integer function $\lfloor x \rfloor$, least integer function $\lceil x \rceil$, increasing/decreasing functions, even/odd function, symmetry about the $y$-axis, symmetry about the origin, linear function, slope, power function, polynomial function (degree, coefficients), rational functions, algebraic/transcendental functions, exponential functions.

**1.3 Trigonometric Functions.** Radians, standard position of an angle, special angles and their trig functions, periodic function/period, graphs of the six trig functions, trig identities, sum and difference formulas, double angle formulas, half angle formulas, law of Cosines, Law of Sines, general sine function (amplitude, period, horizontal shift, vertical shift).

**1.5 Exponential Functions.** Exponential function with base $a$, integer exponents/rational exponents/irrational exponents, Rules for Exponents, natural exponential functions.

**1.6 Inverse Functions and Logarithms.** One-to-one function, horizontal line test, inverse function, logarithm function with base $a$, Algebraic Properties of the Natural Logarithm, inverse properties of exponential and logarithmic functions, restrictions of domains to find inverses, inverse trig functions.