natural logarithm the function $\ln x = \log_e x$

number e as m gets larger, the quantity $(1 + (1/m)^m$ gets closer to some real number; we define that real number to be e; the value of e is approximately 2.718282

odd function a function is odd if $f(-x) = -f(x)$ for all x in the domain of f

one-to-one function a function f is one-to-one if $f(x_1) \neq f(x_2)$ if $x_1 \neq x_2$

periodic function a function is periodic if it has a repeating pattern as the values of x move from left to right

piecewise-defined function a function that is defined differently on different parts of its domain

point-slope equation equation of a linear function indicating its slope and a point on the graph of the function

polynomial function a function of the form $f(x) = a_n x^n + a_{n-1} x^{n-1} + \ldots + a_1 x + a_0$

power function a function of the form $f(x) = x^n$ for any positive integer $n \geq 1$

quadratic function a polynomial of degree 2; that is, a function of the form $f(x) = ax^2 + bx + c$ where $a \neq 0$

radians for a circular arc of length s on a circle of radius 1, the radian measure of the associated angle θ is s

range the set of outputs for a function

rational function a function of the form $f(x) = p(x)/q(x)$, where $p(x)$ and $q(x)$ are polynomials

restricted domain a subset of the domain of a function f

root function a function of the form $f(x) = x^{1/n}$ for any integer $n \geq 2$

slope the change in y for each unit change in x

slope-intercept form equation of a linear function indicating its slope and y-intercept

symmetry about the origin the graph of a function f is symmetric about the origin if $(-x, -y)$ is on the graph of f whenever (x, y) is on the graph

symmetry about the *y*-axis the graph of a function f is symmetric about the y-axis if $(-x, y)$ is on the graph of f whenever (x, y) is on the graph

table of values a table containing a list of inputs and their corresponding outputs

transcendental function a function that cannot be expressed by a combination of basic arithmetic operations

transformation of a function a shift, scaling, or reflection of a function

trigonometric functions functions of an angle defined as ratios of the lengths of the sides of a right triangle

trigonometric identity an equation involving trigonometric functions that is true for all angles θ for which the functions in the equation are defined

vertical line test given the graph of a function, every vertical line intersects the graph, at most, once

zeros of a function when a real number x is a zero of a function f, $f(x) = 0$

KEY EQUATIONS

- **Composition of two functions**
  $(g \circ f)(x) = g(f(x))$
- **Absolute value function**
  $$f(x) = \begin{cases} -x, & x < 0 \\ x, & x \geq 0 \end{cases}$$