# Glossary

## A - E

**amplitude** - half the distance between the maximum and minimum values in a range

**angle of depression** - the angle between an observer's line of sight and an object below the horizontal

**angle of elevation** - the angle between an observer's line of sight and an object above the horizontal

**antilog** - short for *antilogarithm*, the inverse function of the logarithm; the number that results when a base is raised to a power by a logarithm

**arc** - a part of the circumference of a circle

**arithmetic sequence** - a list of numbers in which the next term is formed by adding a constant to the previous term

**arithmetic series** - a sum of numbers in which the next term is formed by adding a constant to the previous term

**asymptote** - a line that is continually approached by a given curve but is never met by that curve

**calculus**- a branch of mathematics dealing with rates of change

**characteristic**- the part of a logarithm that is a whole number

**cofunction**- a reciprocal of one of the three basic trigonometric functions

**complex number**- a combination of a real and an imaginary number in the form $a + bi$

**composite function**- a combination of functions where the solutions for one formula become the domain of the other

**conjugate**- a binomial formed by negating the second term of a given binomial

**continuous function**- a function in which every value in the domain is defined and has a corresponding value in the range; its graph will have no gaps between points

**coterminal angles**- angles with the same initial and terminal sides

**derivative**- the rate of change, found by determining the slope of the line tangent to that function

**domain**- the set of all possible input values for a function, or the set of all possible values for the independent variable in a function

**extremum**- a maximum or minimum; plural is *extrema*

## F - M

**function** - a relation in which each input has a single output; often written as $f(x)$

**geometric sequence** - a list of numbers in which the next term is formed by multiplying the previous term by a constant

**geometric series** - a sum of numbers in which the next term is formed by multiplying the previous term by a constant

**horizontal line test** - a method used to determine whether a function is one-to-one; that is, whether each $y$-value has a unique $x$-value

**identity** - an equation that is true for every value of the variable

**imaginary number** - a number that, when squared, gives a negative product; generally written in the form $bi$, where $i$ equals the square root of -1

**initial side** - the ray from which the measurement of an angle begins, usually placed on the positive $x$-axis in a coordinate grid

**integral** - the total change over a certain period; can be interpreted as an area or a generalization of an area in a graph

**interpolation** - an estimation of a value between two given values

**inverse trigonometric function** - a function expressed as the ratio of the lengths of two of the sides of a right triangle containing the given angle (cosecant, secant, and cotangent, which are the reciprocals of sine, cosine, and tangent)

**limit** - the value that a function approaches but never reaches

**logarithm** - the power to which a base must be raised in order to equal a given number

**mantissa** - the part of a logarithm that is a decimal

**multiplicity** - the number of times a particular number is a zero for a given polynomial

## N - P

**natural exponential function** - a function in which the independent variable appears as an exponent; represented as $f(x) = e^x$

**natural log function** - the inverse of the natural exponential function, represented as $f(x) = \ln x$

**natural logarithm** - the inverse of $e^x$

**one-to-one function** - a function for which every element of the range corresponds to exactly one element of the domain

**parabola** - a conic section that forms a symmetrical curve on a graph

**period** - the smallest interval over which the values of a function repeat, shown as horizontal distance on a graph

**periodic function** - a function that repeats values in regular intervals

**phase shift** - the horizontal shift of a graph created by a change to the $x$ value of the function

**polar coordinate system** - a coordinate system in which each point on a plane is determined by a distance from a reference point and an angle from a reference direction

## R - S

**range** - the set of all possible output values for a function, or the set of all possible values for the dependent variable in a function

**radian** - a unit of measure for angles based on the relationship between the radius and circumference of a circle; one radian equals $180/\pi$ degrees

**ratio** - the relationship between two values; can be written in fractional form

**rational roots test** - a technique used to find possible solutions for higher-degree polynomials by forming fractions with factors of the constant over factors of the leading coefficient

**reference angle** - the smallest angle between the terminal side and the *x*-axis

**reflection** - a transformation in which a figure is flipped over a line to create a mirror image

**relation** - a set of ordered pairs that may or may not represent a function

**remainder theorem** - a theorem that states that the remainder of a function in *x* that is divided by $x - c$ is $f(c)$

**simultaneous equations** - a pair of equations with two unknown variables that must be solved at the same time

**sinusoidal curve** - a graph that has the same shape as the sine function

**symmetry** - having congruent parts facing each other across an axis, with one the reverse of the other

**synthetic division** - a method of dividing polynomials by a first-degree polynomial in the form $x - c$

## T - Z

**terminal side** - the ray of an angle that is not the initial side

**transformation** - the movement of a figure in the coordinate plane

**translation** - the movement of a figure across a given distance without changing its size or orientation

**trigonometric function** - a function expressed as the ratio of the lengths of two of the sides of a right triangle containing the given angle (sine, cosine, and tangent)

**trigonometry** - the branch of mathematics dealing with the sides and angles of triangles and with the functions of their angles

**undefined** - having no mathematical meaning

**unit** - a quantity used as a standard of measure

**unit circle** - a circle that is centered at the origin and has a radius of one

**vertical line test** - a test used to see if a graph represents a function; that is, whether each whether each *x*-value has a unique *y*-value