

# Looking Ahead to Calculus Key Words

## Limit of a Function Lesson

continuous function – a function whose graph is a single, unbroken curve

direct substitution – a method used to determine the limit of a continuous function

left-hand limit – the value that  $f(x)$  approaches as  $x$  approaches  $a$  from the left

limit of a function – the value that  $f(x)$  approaches as  $x$  approaches  $a$

right-hand limit – the value that  $f(x)$  approaches as  $x$  approaches  $a$  from the right

## Properties of Limits Lesson

constant function – a function of the form  $f(x) = c$ , where  $c$  is any real number

identity function – the function of the form  $f(x) = x$ , where  $x$  is any real number

polynomial function – a function that may be written as the sum or difference of terms of the form  $ax^k$ , where  $a$  is a constant,  $x$  is a variable, and  $k$  is a whole number exponent

## Continuity of Functions and Limits Lesson

continuous function – a function whose graph is a single, unbroken curve

discontinuous function – a function whose graph has a hole, jump, or vertical asymptote

## Rate of Change Lesson

derivative of  $f(x)$  at  $a$  – written as  $f'(a)$ ; the slope of the tangent line at the point  $(a, f(a))$

difference quotient – the slope of the secant line between the points  $(a, f(a))$  and  $(a+h, f(a+h))$

instantaneous rate of change – the rate of change at a specific point

secant line – a line between two points on a curve whose slope represents the average rate of change of a function

slope – the ratio of the vertical change to the horizontal change between two points

tangent line – a line that touches a function at one point whose slope represents the instantaneous rate of change of a function

## Applications of the Derivative Lesson

acceleration – the rate at which an object's velocity is changing

average velocity – the average rate of change of an object's position over a specific time interval

derivative of  $f$  at  $x$  – the slope of the tangent line to  $f$  at any value of  $x$

displacement – the change in an object's position in space

instantaneous velocity – an object's velocity at a specific point in time

velocity – how quickly and in which direction an object's position in space is changing