

Section 11.3 The Tangent Line Problem

Objective: In this lesson you learned how to approximate slopes of tangent lines, use the limit definition of slope, and use derivatives to find slopes of graphs.

Course Number

Instructor

Date

I. Tangent Line to a Graph (Page 801)

The **tangent line** to the graph of a function f at a point $P(x_1, y_1)$ is . . .

What you should learn

How to define the tangent line to a graph

To determine the rate at which a graph rises or falls at a single point, . . .

II. Slope of a Graph (Page 802)

To visually approximate the slope of a graph at a point, . . .

What you should learn

How to use a tangent line to approximate the slope of a graph at a point

III. Slope and the Limit Process (Pages 803–805)

A **secant line** to a graph is . . .

What you should learn

How to use the limit definition of slope to find exact slopes of graphs

A **difference quotient** is . . .

Give the definition of the slope of a graph.

Example 1: Use the limit process to find the slope of the graph of $f(x) = x^2 + 5$ at the point $(3, -1)$.

IV. The Derivative of a Function (Pages 806–807)

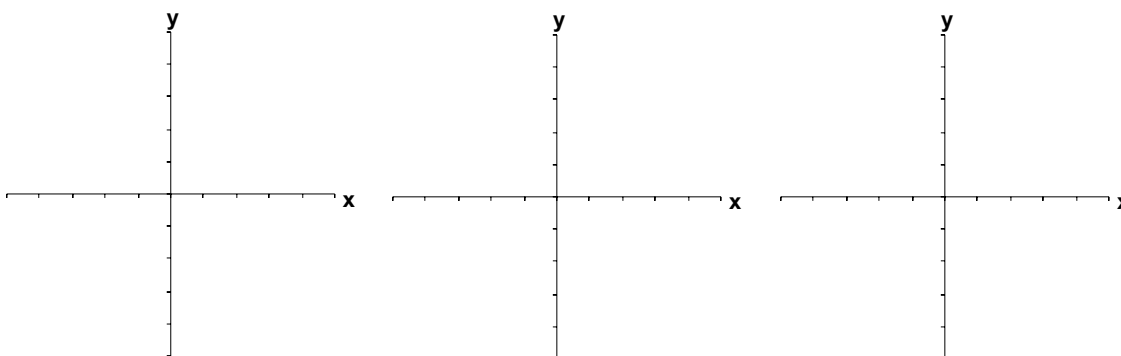
The derivative of f at x is the function derived from . . .

What you should learn
How to find derivatives of functions and use derivatives to find slopes of graph

Give the formal definition of the **derivative**.

The derivative $f'(x)$ is a formula for . . .

Example 2: Find the derivative of $f(x) = 9 - 2x^2$.



Homework Assignment

Page(s)

Exercises