



## About the Mathematics

The Derivative Analysis document is very simple but provides a very powerful tool for discussing the language of function graphical behavior (increasing, decreasing, concave up, and concave down).

## Math Objective

- Students will have the opportunity to associate the verbal language of function behavior (increasing, decreasing, concave up, concave down) with characteristics of the graph of the function.

## Using the Document

Page 1.1 provides the title page and page 1.2 provides the instructions for page 1.3: a point on the  $x$ -axis can be dragged and the increasing/decreasing behavior in a neighborhood of that point is reported verbally.

Page 2.1 provides instructions for the use of a slider on page 2.2. The intervals where the function is increasing or decreasing are displayed verbally and graphically.

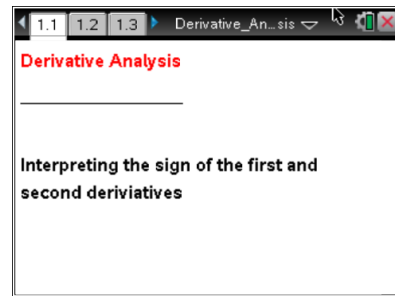
Page 3.1 provides the instructions for page 3.2: a point on the  $x$ -axis can be dragged and the concave up/down behavior in a neighborhood of that point is reported verbally.

Page 4.1 provides instructions for the use of a slider on page 4.2. The intervals where the function is concave up or down are displayed verbally and graphically.

The function under consideration can be changed by the user by simply editing  $f1(x)$ .

## Possible Application

The document can be used to develop first and second derivative tests for extrema and to develop understanding of the idea of an inflection point.



### TI-Nspire™ Technology Skills:

- Download a TI-Nspire document
- Open a document
- Move between pages
- Grab and drag a point
- Click on a minimized slider
- Define a function on the entry line

### Tech Tips:

- Make sure the font size on your TI-Nspire handheld is set to Medium.
- In Graphs, you can hide or bring up the function entry line by pressing **ctrl** **G**.

### Lesson Materials:

Derivative\_Analysis.tns