About the Mathematics

The Derivative Grapher documents provide tools for visualizing the relationship between the graph of a function and the graph of its derivative function.

Objective

- Allow students to see graphically how the derivative as a function is derived from considering the derivative (slope of tangent line) at each point.
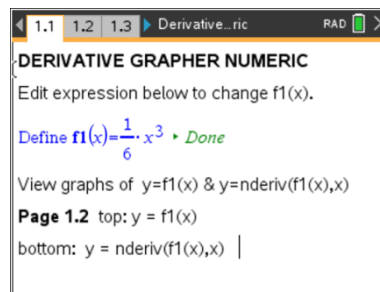
Using the Documents

These documents are optimized for different versions of TI-Nspire. The *Derivative_Grapher_CAS.tns* document is intended for the TI-Nspire CAS handheld, the *Derivative_Grapher_Numeric.tns* document is intended for the TI-Nspire CX/CXII handheld, and finally, the *Derivative_Grapher_software_CAS.tns Derivative_Grapher_software_numberic.tns are* intended for the CX CAS/CX computer software (possibly for display by the teacher).

Page 1.1 provides the instructions and the opportunity to define **f1**(*x*) in an interactive math box. On page 1.2, the graph of **f1** and its derivative are displayed. On page 1.4 (1.3 in the computer software version), the user can also trace both the function and its derivative simultaneously through the use of a set of slider arrows. The tangent line and its slope are displayed at the trace point on the graph of the function, allowing students to see the direct connection between that value and the *y*-coordinate on the derivative's graph.

Possible Application

The documents can be used to develop general relationships between increasing or decreasing behavior of the function and the sign of the first derivative, leading to development of the first derivative test for extrema.

TI-Nspire™ Technology Skills:
- Open a document
- Move between pages
- Edit an interactive text box
- Click on a minimized slider

Tech Tips:
- Make sure the font size on your TI-Nspire handheld is set to Medium.
- You can hide the function entry line by pressing (ctrl)(G).

Lesson Materials:
TI-Nspire documents
Derivative_Grapher_CAS.tns
Derivative_Grapher_Numeric.tns
Derivative_Grapher_software_CAS.tns
Derivative_Grapher_software_Numeric.tns

Visit www.mathnspired.com for lesson updates.