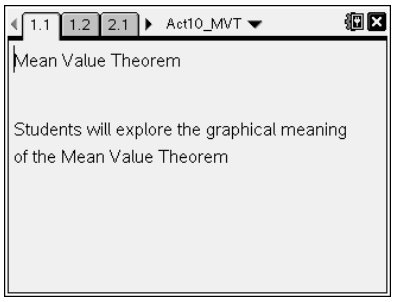
Mean Value Theorem
Student Activity

Name _____
Class _____

Open the TI-Nspire document *Mean_Value_Theorem.tns.*



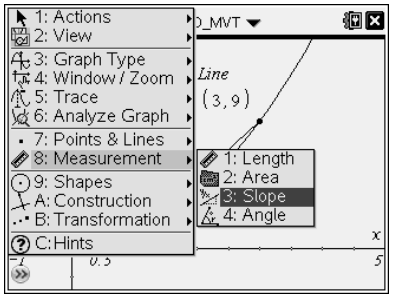
Objective: To calculate slopes of secant lines, create tangent lines with the same slope, and note observations about the functions and slopes

Directions: Calculate the slope of the given secant line: **Menu > Measurement > Slope.** Place a tangent line on the graph (**Menu > Points & Lines > Tangent Line**) and find the slope of the tangent line. Move the tangent line so that the slope matches the slope of the secant line. Note any observations about the relationship between the secant and tangent line.

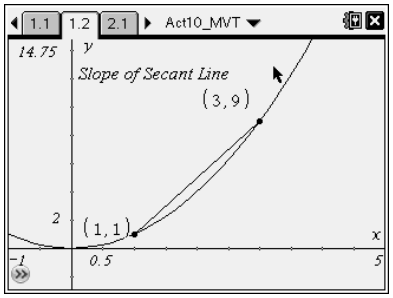
Move to page 1.2.

Press ctrl ▶ and ctrl ◀ to navigate through the lesson.

1. Calculate the slope of the secant line: **Menu > Measurement > Slope.**

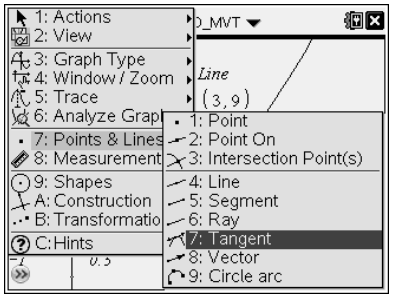


Press ⊙ once to select the segment, then move the slope value and press ⊙ again to place the value on the screen.

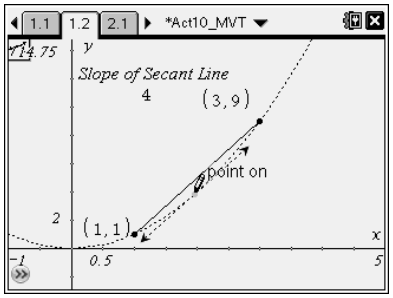


> **Tech Tip:** Press esc after completing an operation to cancel the operation. The small icon in the upper left-hand corner of the screen will disappear.

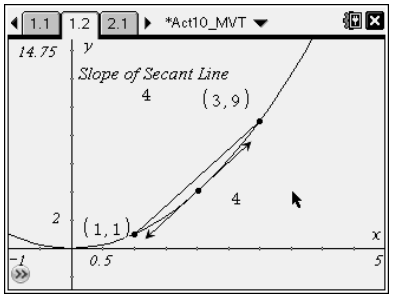
Place the tangent line: Press **Menu > Points & Lines > Tangent.**



Place the tangent line on curve by moving cursor over curve and pressing ⍾. The slope can found by following the same procedure as finding the slop of the secant line.



To move the tangent line to match the slope to the slope of the secant line, grab by double-clicking on the ⍾ button so that the hand closes around the point tangent to the curve.



Record your observations here:

Move to page 2.1.

2. Repeat the same steps for problem 2 and record your observations.

Move to page 3.1.

3. Repeat the same steps for problem 3 and record your observations.

4. Do your observations still hold? Why or why not?

Notes: Mean Value Theorem

Move to page 5.1.

5. Repeat the steps for the previous problems on problem 5.1. Determine if the Mean Value Theorem still holds.

   Record your observations here:

Move to page 6.1.

6. Repeat the steps for the previous problems on problem 6.1. Determine if the Mean Value Theorem still holds.

   Record your observations here:

Notes: Rolle's Theorem

7. What is the difference in conditions between the MVT and Rolle's Theorem?

8. What does Rolle's Theorem tell you must exist on a given interval?

