Math Objectives

- Students will show graphically that a Taylor Series for a function becomes the function as the number of terms increases towards infinity.

Activity Type

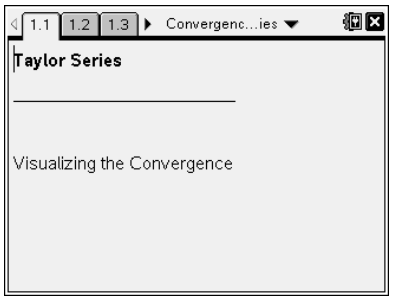
- Teacher Demonstration

About the Lesson

- The teacher will graphically demonstrate the property of a Taylor Series becoming equal to a function as the number of terms reaches infinity. As the *n* value in the slider changes, more or less terms of the Taylor Polynomial are shown. As *n* increases, the graphs become the same.

Directions

- Use the ⓒ button to select the up/down arrows to view more or fewer terms of the Taylor Series for the given function.
- To change the function, double-click on the function to type in your new function.



TI-Nspire™ Technology Skills:

- Download a TI-Nspire document
- Open a document
- Move between pages
- Grab and drag a point

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.

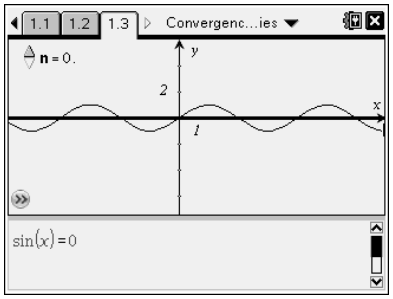
Lesson Materials:
Student Activity
Not applicable

TI-Nspire document
Convergence_of_TaylorSeries.tns

Visit www.mathnspired.com for lesson updates.

Student Activity Questions and Answers

CLASS DISCUSSION: For each function, discuss how many terms are needed until the Taylor Series matches the function in the given window.



For sin *x* and cos *x*, students should note that only odd or even values of *n* change the graph.

Other functions to examine:

1. cos *x*
2. e^x
3. ln *x*
4. polynomial functions