MSPA 400: Session 6 Python

Reading

Think Python 2nd Edition Chapter 7 (7.1 to 7.7)

Think Python 3rd Edition Chapter 7 (pages 75-81)

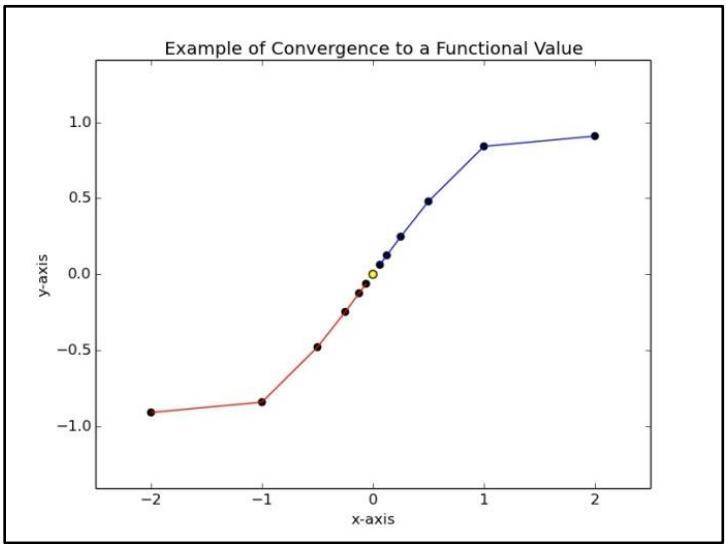
Module 1

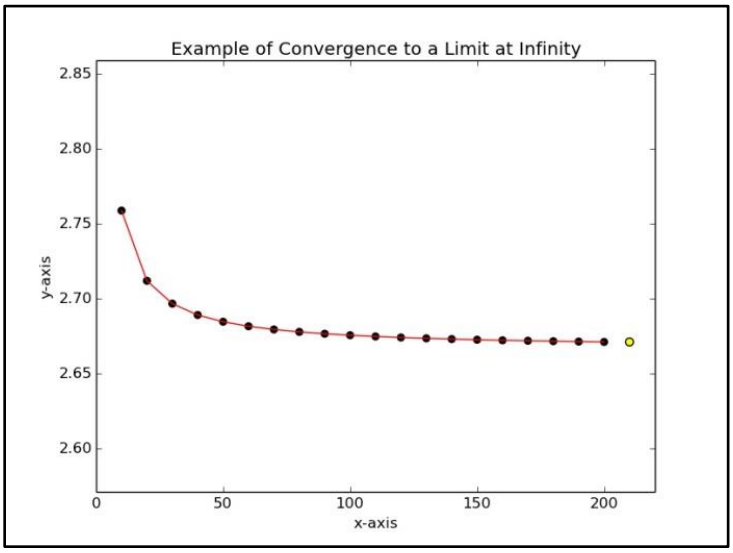
(Session 6 Module 1.py)

Objectives:

1. Demonstrate numerical limits.
2. Illustrate convergence graphically.

Output from Module 1.py:





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Exercises:

1. Refer to Lial Section 11.1 Example 1. Generalize the code for the function indicated to determine a limit when x=2. Compare the code and the resulting plot to the answer sheet.

2. Generalize the code which was used to determine a limiting value at infinity. Apply to Lial Section 11.1 Example 11.

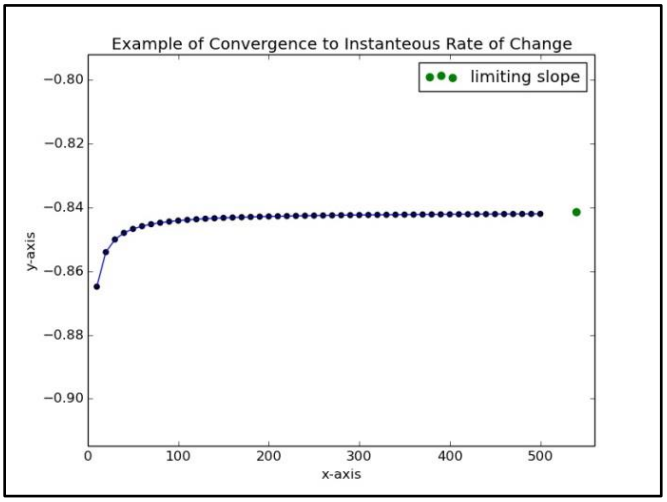
Module 2

(Session 6 Module 2.py)

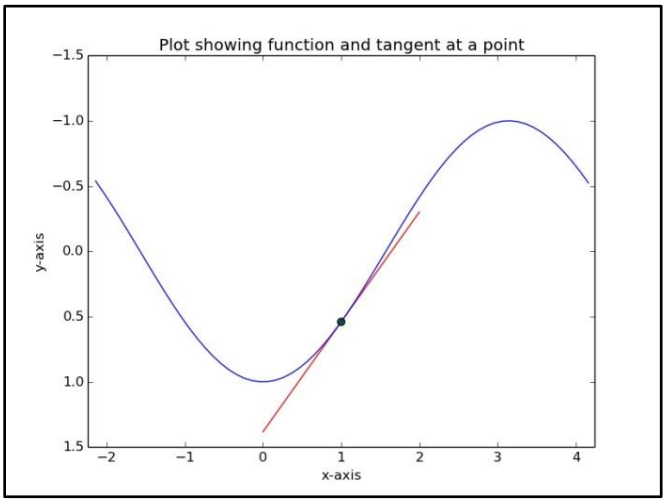
Objectives:

1. Demonstrate numerical differentiation.
2. Illustrate results graphically.

Output from Module 2.py



Final value equals -0.841



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Exercises:

1. Refer to Lial Section 11.3 Examples 3-5. Using the function der() as defined, calculate approximate slopes for the functions given in Lial Section 11.3 Examples 3(b), 4(c), & 5. Use a small value for delta and evaluate der() at the points used in the examples. Round to 4 places.

2. Refer to Lial 11.1 Example 1. This example was used in Session 6 Module 1. The solution code is presented in the answer sheet. Modify the code shown so that the tangent line at x=2 appears on the preceding plot. This necessitates determining the linear equation for the tangent line using y=mx+b and writing the statements to plot this line on the existing plot. Use arange().