MSPA 400: Session 8 Python

Reading

Think Python 2nd Edition Chapter 11 (11.1-11.8)

Think Python 3rd Edition Chapter 11 (pages 121-132)

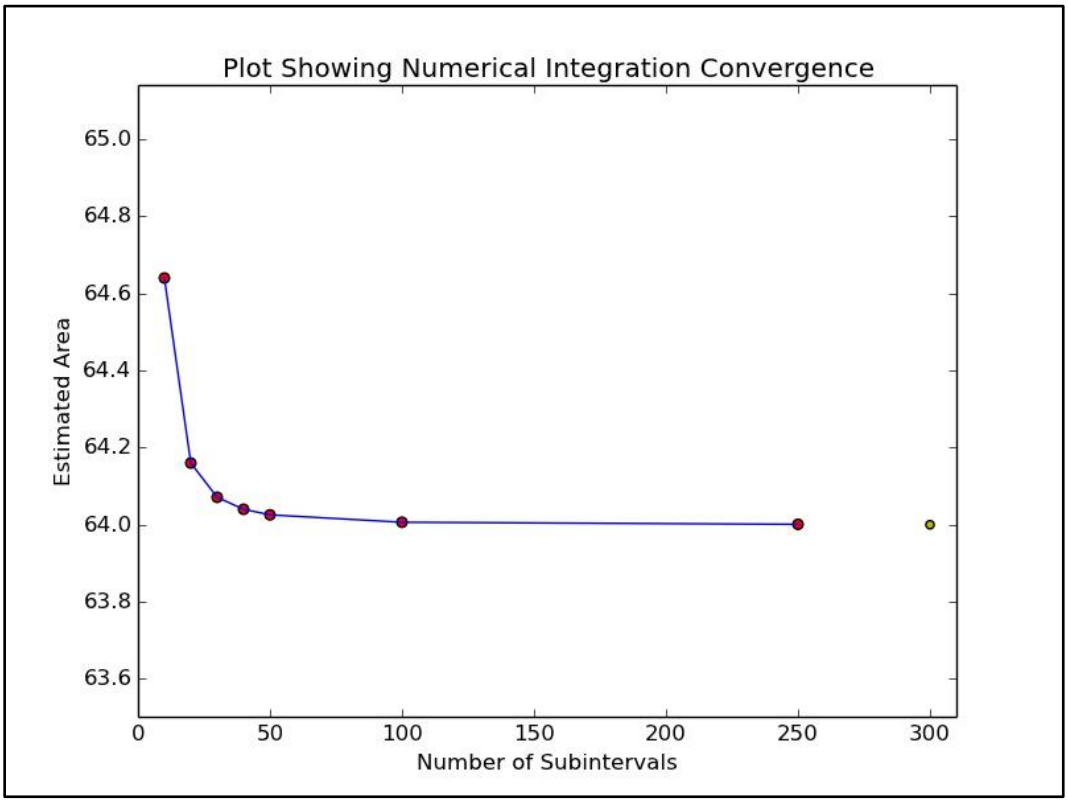
Module 1

(Session 6 Module 1.py)

Objectives:

1. Present numerical integration.
2. Demonstrate convergence to limiting areas.
3. Plot results.

Output from Module 1.py:



Final Estimate of Area with 250 subdivisions = 64.001

Exercises:

1. Instead of using the trapazoidal rule for integration, substitute the midpoint rule in the function integrate() and run the rest of the code without modification. Note the difference in how convergence occurs. Compare to the answer sheet.

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Module 2

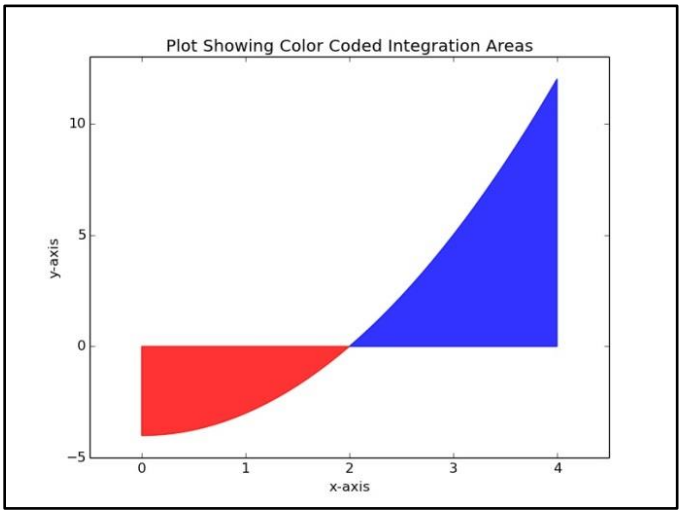
(Session 6 Module 2.py)

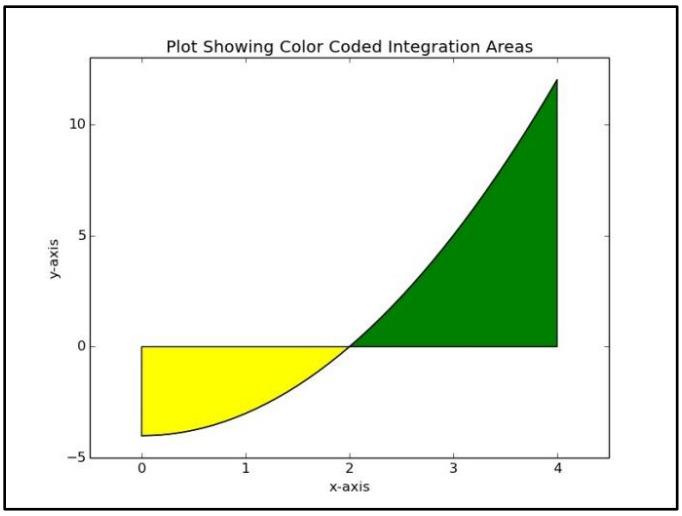
Objectives:

1. Demonstrate how to handle negative areas with numerical integration.
2. Plot results using Python fill_between().
3. Demonstrate the use of an inequality for plotting different colors.

Output from Module 2.py

Final Estimate of Area= 16.0





Exercises:

1. Refer to Lial Section 15.4 Exercise 42. Modify the code to reproduce the plot shown in the exercise. Compare to the answer sheet.