

IntegratorCalculator

Computational Physics

Project #11 [Due April 16th, 2009]

Complete the coding of the “IntegratorCalculator class” introduced in Chapter 13. After you have satisfactorily completed the “IntegratorCalculator” assignment, modify the numerical integrating function to use the 3-point Simpson rule, given by

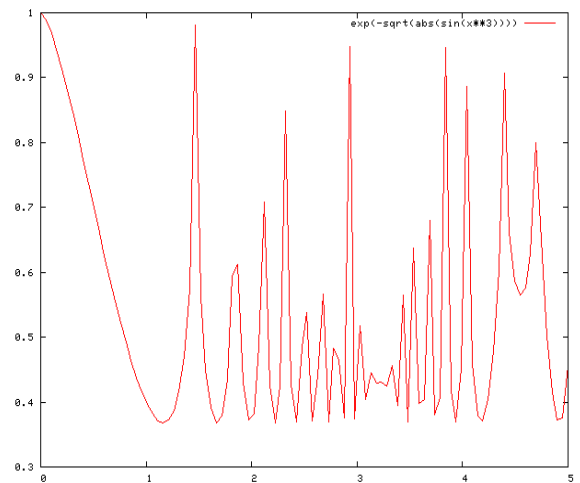
$$\int_{x_a}^{x_b} f(x)dx = \frac{w}{6} \sum_{i=0}^{n-1} f(x_a + i*w) + 4f(x_a + w(i+1/2)) + f(x_a + (i+1)*w)$$

Homework Assignment

[Due April 21st, 2009]

Now use your new IntegratorCalculator to integrate the function below and determine the solution to 6 decimal places.

$$\int_0^5 e^{-\sqrt{|\sin(x^3)|}} dx$$



$$f(x) = e^{-\sqrt{|\sin(x^3)|}}$$

Record your work and report your results on your computational physics website. Create a html page for Exercise 11. Create a link from your main project web page to this html page.

[Over for addendum to exercise]

This html page should include the following heading information: exercise title, exercise number, your name, & today's date. The main content of this page should include the following:

- a short description of the exercise and final results
- a link to the source code
- a text region which contains the actual source code text

Project #11 (Bonus)

Use doxygen to generate html documentation of your IntegralCalculator class.

- Split code into several files
 - IntegralCalculator.h
 - Class header file containing class definition
 - IntegralCalculator.cc
 - Source code file for class member functions
 - i.e. Your “IntegralCalculator::<memberFunction>” code
 - <your_program>.cc
 - Source code file for your main()

Copy and link the “html” directory to your Exercise #11 webpage