IntegratorCalculator

Computational Physics

Project #11   [Due April 4, 2008]

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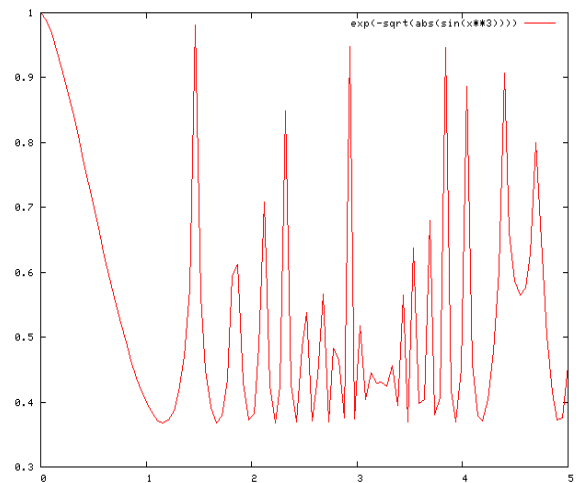
$$\int_{x_a}^{x_b} f(x)\,dx = \frac{w}{6}\sum_{i=0}^{n-1} f(x_a+i*w)+4f(x_a+w(i+1/2))+f(x_a+(i+1)\,w)$$

Homework Assignment

[Due April 8, 2008]

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

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

exp(-sqrt(abs(sin(x**3))))

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

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