Fifth Computing Project
Math/CS 375, Fall 1997
Professor Coutsias

This project is due Dec 2. Plan your work so that if your computer is down a short period, your project will not be late. This project will count as part of your grade so you must work independently. It is permissible to discuss the project with your instructor, fellow students, and friends. However, the computer programs and report must be done only by the student doing the project.

The project is to use the textbook's adaptive integration routine, adapt. If necessary, modify it so that the number of function evaluations is printed.

i. Use Adapt on all the integrands in Exercise 5.4, but with RELERR = $10^{-2}, 10^{-4}, 10^{-6}, 10^{-8}$. Comment on the questions in 5.4, and on the behavior of the number of function evaluations as RELERR is changed.

ii. Solve Exercise 5.6.

iii. With RELERR = 10^{-6} and ABSERR = 10^{-10} compute

$$\int_a^b e^{-x^2} dx,$$

for $(a, b) = (-5, 5), (-10, 10), (-20, 20), (-50, 2000)$. Comment on the results. Explain any unexpected behavior.

Grading will be 50% for (i.), 25% for (ii.) and 25% for (iii.).