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Math-5630/6630
Introduction to Numerical Analysis I
Summer 2007
Homework 8

Problems

1. Do problems 7 and 8 on p. 422 of your textbook.

Programs

1. Program the Midpoint rule, Trapezoidal rule, and Simpson’s rule and apply, with \( n = 2^m \) subintervals, for \( m = 0, 1, \ldots, 6 \), to

\[
\int_3^5 \frac{1}{\sqrt{x^2 - 4}} \, dx
\]

and

\[
\int_0^4 x^{3/2} \, dx.
\]

Compute the exact integrals and absolute errors and display the results in a table.

2. Program the Romberg integration algorithm and apply to the integrals above with \( m = 6 \) (that is, compute \( A_{6,6} \)).

* Math 6630.