

MATH661 Homework 3 - Approximate quadrature and differentiation

Posted: Sep 23 Due: 11:55PM, Oct 4

1 Problem statement

Approximate differentiation and integration arise frequently in applications through discretization of local, respectively global expressions of physical laws.

2 Theoretical exercises

1. K&C, 7.1.6-7.1.18, p.477. Do one or two of these by hand computation of the Taylor series, and then switch to symbolic computation carried out on the computer (Macysma, Mathematica, Sage, ...)
2. K&C, 7.1.12, p. 477
3. K&C, 7.2.4-5, p. 488
4. K&C, 7.2.8-9, p. 488
5. K&C, 7.3.3-5, p. 498
6. K&C, 7.3.31, p. 501.

3 Implementation and analysis

1. K&C 7.2.1, p. 491.
2. K&C 7.2.2, p. 491.
3. K&C 7.2.3, p. 491.
4. K&C 7.3.1, p. 501.