

AMSC/CMSC 460 Quiz 4 , Fall 2002

Show all work. You may leave arithmetic expressions in any form that a calculator could evaluate. By putting your name on this paper, you agree to abide by the university's code of academic integrity in completing the quiz. Use no books, calculators, cellphones, communication with others, scratchpaper, etc.

Name \_\_\_\_\_

Student number \_\_\_\_\_

1. (10) Suppose we are given 20 points  $0 = t_1 < t_2 < \dots < t_n = 1$ . Write the formula for the composite trapezoidal rule with  $n - 1$  panels that uses these points to approximate

$$\int_0^1 t^3 dt.$$

2. (10) Let

$$I = \int_0^1 f(t) dt.$$

Suppose we approximate  $I$  by a rule of the form

$$Q(f) = \omega_1 f(t_1) + \omega_2 f(t_2).$$

Write down conditions to make this rule exact for polynomials of degree 3 or less.