AMSC/CMSC 460 Quiz 9 , Fall 2001

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 _____

1a. (5) Give an important advantage of Runge-Kutta methods over PECE Adams methods.

1b. (5) Give an important advantage of PECE Adams methods over Runge-Kutta methods.

2. (10) Suppose we have measured 10 data points (t, y) as $(i * .1, y_i)$, $i = 1, \ldots, 10$. Suppose that we believe the data is well modeled by the function

$$y(x) \approx x_1 \cos t + x_2 t^2 \, .$$

If we do a least squares fit to determine x_1 and x_2, we solve

$$\min_x \|Ax - b\|_2$$

Give the matrix A and the vector b that we would use.