AMSC/CMSC 460   Quiz 7   ,   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 _____

1. (10) Let
$$f(x) = x^2 - 4 \, .$$

Suppose our guess at the zero of this nonlinear equation is 2.5. If we apply Newton's method, what would the next guess be?

2. (10) Suppose we want to solve the problem

$$\min_{x} \frac{1}{2}x_1^2 + \frac{3}{2}x_2^2 + x_1 - x_2 + 5$$

and we have the initial guess $x_1 = 2, x_2 = 3$. What is the steepest descent direction from this guess?