ISyE 6663 Optimization III

Spring 2003

Assignment 6

Issued: April 1, 2003

Due: April 10, 2003

Problem 1
Nocedal and Wright, Problem 8.3

Problem 2
Nocedal and Wright, Problem 8.4

Problem 3
Nocedal and Wright, Problem 8.8

Problem 4
Nocedal and Wright, Problem 8.9

Problem 5
Nocedal and Wright, Problem 8.10

Problem 6
Program the BFGS method with Armijo line search. Set $B_0 = I$. Set the initial step length equal to 1, and set the step length reduction factor to 0.8. Use your program to minimize the Rosenbrock function, with initial points $(1.2, 1.2)$ and $(-1.2, 1)$. Also use your programs for steepest descent and Newton's method to minimize the same function. Compare the number of steps taken by each algorithm to attain an objective value of 10^{-6}. Make a two dimensional plot of the sequence of iterates of each method.