

ISyE 6663 Optimization III

Spring 2003

Assignment 7

Issued: April 15, 2003

Due: April 24, 2003

Problem 1

Nocedal and Wright, Problem 12.3

Problem 2

Nocedal and Wright, Problem 12.4

Problem 3

Nocedal and Wright, Problem 12.5

Problem 4

Nocedal and Wright, Problem 12.13

Problem 5

Nocedal and Wright, Problem 12.14

Problem 6

Nocedal and Wright, Problem 12.17

Problem 7

Nocedal and Wright, Problem 12.18

Problem 8

It matters how the constraints are formulated: Consider the problem

$$\begin{array}{ll} \min & f(x) \\ \text{s.t.} & h(x) = 0 \end{array}$$

where $h(x) = (h_1(x), \dots, h_m(x))$. Suppose that x^* is a local minimum and that $\nabla f(x^*) \neq 0$. Show that x^* is also a local minimum of the problem

$$\begin{array}{ll} \min & f(x) \\ \text{s.t.} & \|h(x)\|_2^2 = 0 \end{array}$$

but that there is no Lagrange multiplier for this problem corresponding to x^* .