

Nonlinear programming: Homework 2

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May 16, 2006 (due May 23)

Exercise 1

Compute the gradient and the Hessian of the Rosenbrock function:

$$f(x, y) = 100(y - x^2)^2 + (1 - x)^2 .$$

Compute all stationary points. Are they local/global minima or maxima?

Exercise 2

Among all rectangle of a given perimeter, which one has maximal area?

Exercise 3

Solve the problem:

$$\begin{array}{ll} \text{maximize} & xy + yz + xz \\ \text{subject to} & x + y + z = 3 . \end{array}$$