ANALYSIS AND OPTIMIZATION: HOMEWORK 1

SPRING 2016

Due date: Wednesday, February 3.

(1) Let $f(x)$ be the function defined on $[-3,3]$ by

$$f(x) = \frac{x^3}{3} + \frac{x^2}{2} - 2x.$$

Find the critical points, the local minima/maxima, and the global minima/maxima. What are the global minima/maxima if we take $f(x)$ to be defined on the whole real line instead of $[-3,3]$?

(2) Find the global minimum of x^x on $(0,\infty)$.
Be careful when you differentiate!

(3) LEF 9.1: 1–6.
No need to write explanations.

(4) LEF 9.1: 13.

(5) LEF 9.1: 31.

(6) LEF 9.1: 34.

(7) LEF 9.1: 40.

(8) LEF 9.2: 13.

(9) LEF 9.2: 21.

(10) LEF 9.2: 24.

(11) LEF 9.2: 25.

(12) LEF 9.2: 27.