

LOCAL EXTREMA HANDOUT

MAY 17, 2019

Exercise 1. For each of the following functions f , find the critical points of f and use the Second Derivative Test to classify them as local maxima, minima, saddle points, or none of the above.

(a) $f(x, y) = x^2 + x - 3xy + y^3 - 5$

(b) $f(x, y) = (x^2 + y^2)e^{y^2 - x^2}$

Exercise 2. A rectangular cardboard box without a lid is made from 12 m^2 of cardboard. Find the maximum volume of such a box. (Be sure to show that it is the maximum!)