Calculus III (Math 233) Quiz 1

Date: October 25, 2010   Professor Ilya Kofman

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Problem 1. Let $f(x, y) = 2x^2 + y^2 - 6y$.

(a) Find critical points of f in the region $x^2 + 2y^2 < 25$.

(b) Find the exterme values on the ellipse $x^2 + 2y^2 = 25$ using Lagrange multipliers.

(c) Find the exterme values of f on $x^2 + 2y^2 \leq 25$ using the above information.

Problem 2. Find all the critical points of $f(x, y) = 6xy - x^3 - y^3$, and classify them using the Second Derivative Test.