

Worksheet 8
Extreme Values, Lagrange Multipliers

1. Find the absolute minimum and maximum of the function $g(x, y) = 2x^2 + x + 2y^2 - 2$ on the closed bounded region:

$$\Omega = \{(x, y) : x^2 + y^2 \leq 1\}.$$

2. Find the absolute minimum and maximum of the function $f(x, y) = 2x^2 - y^2 + 6y$ on the disk of radius 4, centered at the origin.

3. What are the dimensions of the box with surface area 64 cm^2 that has the largest volume?