

## LAGRANGE MULTIPLIERS HANDOUT

MAY 22, 2019

**Exercise 1.** Find the extrema of  $f(x, y) = x^2 + y^2$  subject to the constraint  $xy = 1$ .

**Exercise 2.** Find the extreme values of  $f(x, y) = e^{-xy}$  on the region where  $x^2 + 4y^2 \leq 1$ .

**Exercise 3.** Find the points on the cone  $z^2 = x^2 + y^2$  that are closest to the point  $(4, 2, 0)$ .