

Math 210 (Lesieutre)  
12.8: Max/min, continued  
February 25, 2017

**Problem 1.** An airline will let you carry on any rectangular bag for which the sum of the dimensions  $x$ ,  $y$ , and  $z$  is less than 60. Suppose that you want to bring a bag with the largest possible volume. To find the appropriate  $x$ ,  $y$ , and  $z$ , what function should you maximize, and on what region?

**Problem 2.** Find the maximum and minimum values of the function  $f(x, y) = 5 - (x - 1)^2 - (y - 1)^2$  on a triangle with vertices  $(0, 0)$ ,  $(8, 0)$ , and  $(0, 4)$ .

**Problem 3.** Consider the function  $f(x, y) = e^{-x^2-2y^2}$ .

a) Find the maximum and minimum on or inside a square with vertices  $(\pm 2, \pm 2)$ .

b) Find the maximum of the same function on the unit circle.