

Math 212 Spring 2020
Multivariable Calculus Written HW 6
Due Wednesday, March 4

1. In the Webwork assignment, problem 16, you are asked to explain why the function $f(x, y) = \frac{4}{x} + \frac{5}{y} + 6x + 7y$ for $x, y > 0$ must have a global minimum. Write that explanation here.
2. Let $a, b, c \in \mathbb{R}$ be constants, let $f(x, y) = ax + by + c$, and let R be a disk in the plane. explain why the maximum and minimum values for f must occur on the boundary of the disk.
3. In statistics, we often want to find a “best fit” line for a collection of data points, defined as the line that minimizes the sum of the squares of the errors for each point. That is, we want to find a line $f(x)$ that minimizes

$$(f(x_1) - y_1)^2 + (f(x_2) - y_2)^2 + \cdots + (f(x_n) - y_n)^2.$$

Find the line of best fit for the collection of data points $(0, 4), (1, 3), (2, 1)$.