Exploring Lagrangian Optimization

Aaron
@philosolog

Brennan
@Brensum

Jordan
@Jadams06

Kerem
@Ottoerm7

Oliver
@aureliusandreas

Contents

Section 1: The Extreme Value Theorem in $\mathbb{R}^2$

Chapter 1

Hungry Joe

The protagonist of our cliche math story is named "Joseph-Louis Lagrange." Because he is not really important, we'll refer to him as "Joe." Right now, he is critically hungry and craving bird meat.. so he goes to the local Burger King.

Chapter 2

Utilmaxxing

> **Theorem 1** († The Extreme Value Theorem in $\mathbb{R}^2$)**.** Suppose that $f(x)$ is continuous on the interval $[a, b]$ then there are two numbers $a \leq c, d \leq b$ so that $f(c)$ is an absolute maximum for the function and $f(d)$ is an absolute minimum for the function.

Section 2: The Extreme Value Theorem in $\mathbb{R}^3$

Chapter 3

Hangry Joe

Not fully satisfied with the Chicken Jr. he bought, Joe gets angry. Now, he
not only wants to satisfy himself with the chicken but also rigor himself with
spiciness. So, Joe wants to buy the Spicy Chicken Jr.

Chapter 4

He's a Nerd!

Section 3: The Method of Lagrange Multipliers

Chapter 5

Poor Joe

Chapter 6

Joe's Math

Chapter 7

A Brief Generalization

Section 4: The Cobb-Douglas Production Function

Chapter 8

Rich Joe

Chapter 9

Business Joe

Chapter 10

Another Brief Generalization

**Section 5: The Stuff I Thought I Should Put at the End
but Wasn't Sure if It Was Necessary**

Chapter 11

Concluding Remarks