Reading Assignment 8 (Due Monday 7/12/21 by 12:55 PM)

Basic learning objectives: These are the tasks you should be able to perform with reasonable fluency **when you arrive at our next class meeting**. Important new vocabulary words are indicated in italics.

1. Be familiar with the definitions of *extrema* including local maxima and minima and absolute (or global) maxima and minima.
2. State the definition of a *critical point* and compute the critical points of various functions.
3. Be familiar with the Second Derivative Test. You do not need to memorize it, but you must understand how to use it.
4. State the Extreme Value Theorem and understand how to apply it in optimization problems. Specifically, understand the method described in the following paragraph of the book: https://activecalculus.org/multi/S-10-7-Optimization.htmlp-2533.

Advanced learning objectives: In addition to mastering the basic objectives, here are the tasks you should be able to perform **after class, with sufficient practice:**

1. Identify local and global extrema using appropriate techniques.
2. Solve optimization problems without constraint using the second derivative test.
3. Solve optimization problems on a closed and bounded region using the second derivative test and the extreme value theorem.
4. Solve optimization problems with constraint using the method of Lagrange multipliers.

Directions: Read the following sections of the book:

- Sections 10.6.3, 10.6.4, 10.6.5. We covered the main ideas in class, but there are no additional tasks to complete. Optional: Section 10.6.6.
- Sections 10.7.1, 10.7.2, and 10.7.3. I am not going to lecture on these topics.
- Section 10.8 up to and including the preview activity.

and complete the following tasks along the way. If an Activity is not listed, you do not need to complete it (although you are welcome to read it). Turn your write up in via gradescope. You do not need to write the questions down, as long as you clearly indicate the question number.

1. Preview Activity 10.7.1.

2. Activity 10.7.2.

3. Activity 10.7.3.

4. Preview Activity 10.8.1.