Reading Assignment 8 (Due Monday 7/15/24 by 12:55 PM)

Directions: Read the following sections of the book:

- Sections 10.7.1 and 10.7.2.
- 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. After Reading Sections 10.7.1-10.7.2, write down three things you learned or questions you still have.
5. Preview Activity 10.8.1.

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.

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. Specifically, understand the method described in this paragraph of the book.
4. Solve optimization problems with constraint using the method of Lagrange multipliers.