

Project 2: Area of Crater Lake

AVAILABLE: [Day 9] DUE: [Day 12]

The method of subdivide-and-conquer is used in Chapter 7 to help us find the area bounded by the graph of a function. This area gives an estimate for (or even the “exact value” of) $t \cdot f(t)$, which may be total distance if $f(t)$ is a velocity function – or total area or volume or mass or force or ... depending on what the function $f(t)$ represents. (See Section 7.1.4 in the text.) This subdivide-and-conquer method is a useful problem-solving strategy for many situations that occur in the world outside of our classroom. The problem of finding the surface area of a lake is one such problem situation.

- Find Project 2: *Area of Crater Lake* at the end of Chapter 7. You are encouraged to discuss this problem with each other, and there will be some time in class on Wednesday February 10 for you to work together on this problem. Each of you is to write up the solution for this project individually.
- You are to word-process your answers to the eight questions given in the statement of Project 2. Be sure to answer each question in complete sentences. While your answers to these questions will involve some numbers, you will not need to type any complicated equations or formulas.
- This project is due at the beginning of class on Monday, February 15. You are to submit a print-out of your document with answers to the eight questions plus a print-out of the map of Crater Lake (with the extra lines that you draw on the map to answer question c). (It is not necessary to print this map in color.)

Grading Criteria:

- **Format: X / 10**
Does your paper give a good professional first impression?
- **Writing Style: X / 15**
Do you use complete sentences to answer each of the questions?
- **Mathematical Content and Correctness: X / 60**
 - Do you answer each of the eight questions?
 - Do you show enough of your thought process that I can understand how you got your answers? Is your work for each of these problems (mathematically) correct?
- **Synthesis and Integration: X / 15**
 - Does your paper give evidence that you understand the process of solving this kind of problem?
 - Do your answers to the questions posed by the project should demonstrate that you are making connections between the mathematical strategies you are learning in this class and the real-world context of this problem?

Late penalty (if necessary): -5 points for each day the project is late

Total: X%