

Lab Assignment 2

Due Monday, April 27th

It is assumed that you will have mastered sections 2.1 – 2.5, 3.1 – 3.3, 5.1 – 5.3, 7.1 – 7.6, 10.1 – 10.6, and 11.1 – 11.5 by the time you complete this lab assignment. Note this does not mean to wait until we have covered all these sections in class before starting this lab assignment! You should begin work on this lab assignment immediately. Take advantage of office hours and the math lab while you are working on this lab assignment.

Your lab assignments must reflect a high level of professionalism. All text should be typed. Equations may be either typed or carefully hand-written in ink. Graphs may be hand-drawn in ink, with a ruler, where appropriate. Use complete sentences as well as correct grammar and punctuation. Your final copy should be organized in the same order that the lab assignments are presented, and bound (a staple in the corner is fine) with a title page. The title page must include your name, the class name and number, the date the assignment is due, and the text “Lab Assignment 2.”

Written Portion (100 points total)

Web Hits (10 points). Visit the following websites to see different types of forums regarding math education and outreach. Either print out the home page, or write a few sentences about what you have discovered to document your efforts.

- <http://www.bhef.com/>
- <http://primes.utm.edu/>
- <http://www.cut-the-knot.org/>
- <http://www.mathforum.org/>

Math In Print (20 points). Select an article that uses mathematics or statistics to argue a point. Write a one-page paper on how the mathematics included may be misleading or how else the statistics might be interpreted. Include a copy of the article and appropriate citation information.

Application Problems (40 points – 8 problems, 5 points each). Complete the following problems from the textbook. Your solutions should be typed, with complete sentences. Equations can be included using MathType, Equation Editor, or equivalent. (Software is available in the math lab.) Equations may also be hand-written in ink. To ensure you receive full credit, show all steps.

- Section 10.2 Problem 50 (page 583)
- Section 10.5 Problem 82 (page 626)
- Section 10.6 Problem 27 (page 636)
- Section 11.1 Problem 88 (page 671)
- Section 11.2 Problem 38 (page 680)
- Section 11.3 Problem 38 (page 695)
- Section 11.4 Problem 48 (page 715)
- Section 11.4 Problem 54 (page 716)

Mathematics Essay (30 points). Although the material we cover in class has been around for centuries, mathematics is a field that is still very much alive. You have two options for this mathematics essay.

Option 1:

Discover a mathematician who was born after 1900 A.D. who captures your interest (Google.com may be very useful). Investigate this mathematician.

- What are or were his or her contributions to the field? For this question, it is not necessary that you are able to derive all of their discoveries, or precisely follow all the math, but you should be able to understand and describe the significance of this person's achievements.
- What motivated this person to become a mathematician (if you can find this information)?
- What difficulties did this person face in achieving his or her dream?
- How did this person work as a mathematician? (In industry? In academia?)
- How are current mathematicians, scientists, or engineers using this person's contributions?
- Why are you interested in this particular character?

Option 2:

There are many famous unsolved mathematics problems that stump even the most brilliant minds today. Find a problem that you are interested in and discover its significance.

- Describe the unsolved problem.
- What is the history of the problem? (What are its origins? How long we have been trying to solve it? Who originally documented the problem?)
- Why is solving this problem important? Are there connections to real-world applications, for example, or does solving this problem open up other areas for investigation?
- How "close" are we to solving the problem (if you can find this information)? Are there any prizes associated with solving the problem?
- What are some related or associated problems that have been solved, if any?
- Why are you interested in this particular problem?

Choose either Option 1 or Option 2 for your lab assignment. No two people may study the same mathematician or problem. Once you have chosen your subject, let me know who it is (e-mail is fine for this). This will be first come, first served. If your topic has already been selected by another student, you must choose another one. All selections must be approved no later than **Tuesday, April 7**. Failure to do so will result in a 10-point penalty on your lab grade.

Prepare a three page essay (12 pt font, double-spaced, 1" margins) reflecting the information you've discovered. Use footnotes to cite your sources.

In-Class Portion (50 points total)

Prepare a three-minute talk about the person or problem you researched for your mathematics essay. (Do not just read the essay you have already prepared, but make an effort to bring your subject “to life” in your speech.) Deliver this presentation in class. We probably will not have access to PowerPoint, but you may use the overhead projector if you have transparencies. You will be graded on the following:

- Did you address the bulleted points described in the essay assignment? *25 points*
- Did you give a professional, practiced presentation, demonstrating an adequate level of preparation? (make an effort to figure out how to pronounce your mathematician’s name correctly!) *20 points*
- Did you speak for the designated amount of time? (going significantly over or under time can lose you points) *5 points*

You will not lose points specifically for your speaking ability (nervousness, jitters, etc.) but you will lose points if you do not present yourself professionally or if you are obviously unprepared. You should try to dress well for your presentation and speak clearly.