

Math 112: History of Calculus Assignment

Name: _____ Section: _____ Score: _____

The purpose of this assignment is to familiarize you with some of the historical notes in your textbook (James Stewart's *Single Variable Essential Calculus*, 8th Edition). Use the referenced sections in your book to answer most of the questions. *You may need to find some details from another source.*

1. Section 5.4

- a) What physical problem led to differential calculus (also 2.7)?
- b) What physical problem led to integral calculus?
- c) What is the formal connection between these two branches of calculus called? In your own words, explain this connection.

d) What was the contribution of Newton and Leibniz to this effort that earned them the distinction "inventors of calculus"?

2. Section 7.7

Like l'Hospital and Pythagoras, Thomas Simpson has been immortalized for a result that did not originate with him. Draw a timeline with the *name, country of origin, and year of birth* for Simpson and the others who knew of this (Simpson's Rule) result before him.

3. Section 11.10

a) What is the connection between the Taylor and Maclaurin Series?

b) What are the full names, countries of origin, and birth years of the mathematicians credited with these two series?

4. Section 11.2 Read problem 89 (in Exercises) that mentions an application of series in fractal geometry, which is a relatively new area of mathematics.

a) How many numbers are in a **Cantor Set**?

b) What percentage of the area of the square is deleted in the first step of the **Sierpinski Carpet**?

Optional Activity: You can create the Sierpinski Carpet at this applet:

<http://www.shodor.org/interactivate/activities/carpet/>