

Math 1152 Written Homework 1

Due: Tuesday, May 17th in Gradescope.

- Calculators are permitted EXCEPT those calculators that have symbolic algebra or calculus capabilities.
- SHOW ALL WORK!
- A completed version of this document is due to be uploaded to Gradescope by 11:59pm on **Tuesday, May 17th**.
- If you have difficulties using Gradescope, see pages under the Gradescope header in the Modules section of our Carmen page for help.
- Ideally, this can be completed on an iPad or android tablet using an app like One Note, Notability, Papyrus, etc. - if you don't have access to one of these options, then printing and scanning or using a smartphone document-scanning feature to generate a pdf to upload will also work.
- If you have difficulties uploading the assignment, email a pdf to your recitation instructor.
- This homework will be graded via random subset selection - not every part of every question will be looked at by the grader.
- Rubrics to applicable questions will be provided later.

Question 1. Find 5 calculus resources, at least 2 of which are textbooks not from this course, and list them below. Skim through them very briefly, and give your impressions. Which do you like the most?

(Possible suggestions: Calculus by Stewart, Calculus by Spivak, Thomas' Calculus, The Cartoon Guide to Calculus, Calculus by Apostol, Calculus: An Intuitive and Physical Approach by Kline)

Resource:

1.

2.

3.

4.

5.

Impresssions:

1.

2.

3.

4.

5.

Question 2. Find the area between the curves $y = x^3$ and $y = x$ two ways: first by integrating “ dy ” and second by integrating “ dx ”.

Answer “ dx ”:

Answer “ dy ”:

Question 3. Download “A Mathematician’s Lament” by Paul Lockhart from our Carmen Course Page. Give a brief summary below. What did you think of it?

Question 4. The region R bounded by $y = x^2 - 4$ and $y = -3x$ is divided into two pieces by the line $y = a$, where $-4 \leq a \leq 12$. R_1 is the part of R that lies below $y = a$ and R_2 is the part of R that lies above $y = a$. Suppose it is known that the area of R_1 and the area of R_2 are equal.

- I. Draw a picture of this situation. Without performing any calculations, **estimate** the value of a and **explain** how you obtained it. Your response will not be graded for correctness on this part.

- II. **Calculate** a and **show** all of your work. You may use technology to solve the equation you obtain for a , but you must evaluate all integrals by hand. Make sure to state what you use to find a . Does your conjecture from Part I affect how you choose to approach this part of the problem? Should it?