Math 1080: Calculus of One Variable II

Written Homework 2 (20 points)

(Sections 6.7, part 2, 8.1, and 8.2)

Due in Canvas by 11:59 pm on Monday, Sept. 14

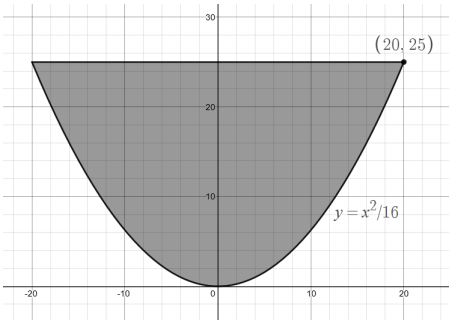
Do the problems below. You are allowed to discuss these problems with your classmates, but the work you hand in must be your own. Remember to:

- Write your **name** on your homework.
- Write neatly, show all work, use proper mathematical notation, and organize your work clearly. If the grader cannot follow your work or certain steps are missing or not justified, you may not receive full credit.
  - Note: It may take you a few tries to figure out the method of solution on a problem. Work through the problem on scratch paper first, then re-write your final solution that you will turn in. This will help in clearly organizing your work and will reinforce the concepts involved in the solution.

Submit your written homework in Canvas: You will submit a pdf file of your homework in Canvas. Go to Written Homework 2 in Canvas and upload the pdf file of your homework solutions. Then click submit assignment. Remember that is it your responsibility to make sure that your scanned work is readable. If the scan is poor quality and cannot be read by the grader, you may not receive credit for your work. After the homework is graded, you will be able to see your grade and any comments on your homework in Canvas.

1. (5 points) A 800-kg elevator is suspended by a 60-m cable that weighs 15 kg/m. How much work is required to raise the elevator from the basement to the third floor, a distance of 10 m?

2. (5 points) The lower edge of a dam is defined by the parabola $y = x^2/16$. Use a coordinate system with $y = 0$ at the bottom of the dam to **SET-UP** but do not evaluate the integral needed to find the total force of the water on the dam. Lengths are measured in meters. Assume the water level is at the top of the dam.



3. (5 points) Evaluate: $\displaystyle\int_0^1 \frac{x^2}{1+x^6}\,dx$.

4. (5 points) Let R be the region bounded by the curves $y = \ln x$, $y = 0$, and $x = 2$. Use the **shell method** to find the volume of the solid generated when the region R is rotated about the y-axis.