Written Homework

Your carefully written solutions to the following questions will be due at the beginning of class on Monday, November 3.

1. Plot each of the following curves on your calculator and sketch a copy of the graph. Then find the lengths of the curves.
   (a) \( x = e^t \cos(t), \ y = e^t \sin(t) \) for \(-2\pi \leq t \leq 2\pi\)
   (b) the loop formed by the curve \( x = 3t - t^3, \ y = 3y^2 \) (You’ll need to determine the correct values of \( t \) here for the limits of integration.)

2. Find the volume of each of the following solids:
   (a) the solid obtained by rotating around the \( x \)-axis the region bounded between the curves \( y = 0 \) and \( y = -x^2 + 3x - 3 \)
   (b) the solid obtained by rotating around the \( y \)-axis the region bounded between the curves \( y = 0 \) and \( y = -x^2 + 3x - 3 \)
   (c) the following pyramid:

3. Find all positive numbers \( b \) such that the average value of the function \( f(x) = 2 + 6x - 3x^2 \) on the interval \([0, b]\) is exactly 3.
Daily Practice Problems

You should do the suggested reading below and attempt these exercises after class each day. You will not submit solutions to these questions for grading, but you may use them as notes during the weekly quizzes on Fridays.

After class on Monday, October 27, read Section 6.2 (upto page 454) and work the following exercises:
Section 6.2, # 1, 3, 5, 13

After class on Tuesday, October 28, read Section 6.2 (upto page 455) and work the following exercises:
Section 6.2, # 15, 21, 27, 33

After class on Wednesday, October 29, finish reading Section 6.2 and work the following exercises:
Section 6.2, # 39, 43, 49, 53

After class on Thursday, October 30, read Section 6.3 and work the following exercises:
Section 6.3, # 5, 7, 9, 23

After class on Friday, October 31, read Section 6.4 and work the following exercises:
Section 6.4, # 1, 3, 5