

Math 134, Fall 2014, Homework 7

The problems are from Calculus, One and Several Variables, 10th Edition by Salas, Hille and Etgen.

For practice - do not hand in

Section 5.8, Problems 1-15, 27.

Section 5.9, Problems 16, 17, 25.

Section 6.1, Problems 8, 16, 30, 38.

Section 6.2, Problems 13, 25, 27, 37.

Section 6.3, Problems 25-30.

Section 6.5, Problems 10, 17, 24, 29.

To hand in

Section 5.8, Problem 34(b). Explain your steps like we did in class for part (a).

Chapter 5 Review, Problem 44 - the first one.

Section 5.9, Problems 16, 17, 25.

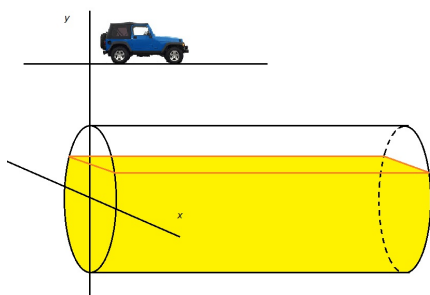
Section 6.1, Problems 40, 46.

Section 6.2, Problems 10 (Also rotate about $y = -1$, $y = 4$, $y = \frac{1}{4}$. The last one is tricky. Do not evaluate the integrals.), 44.

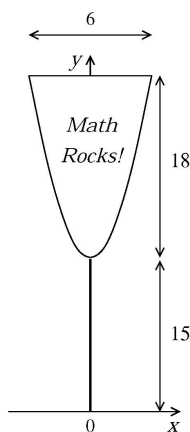
Section 6.3, Problems 40, 42, 46.

Section 6.5, Problem 31.

Also, do the following:



1. Gasoline is stored in a cylindrical tank of radius 9 feet and length 23 feet lying under ground in a gas station. The tank is buried on its side with the highest part of the tank 7 feet below ground. The tank is initially full. Suppose that the filler cap of each car is 2 feet above the ground. Express the work done in pumping all the gasoline as an integral. The density of gasoline is 45 pounds per cubic foot.



2. A flat math billboard is in the shape of (what else?) a parabola. Its top side is 6 feet wide and the billboard is 18 feet high, measured from the lowest to the highest point. It is mounted on a pole and the lowest point of the billboard is 15 feet above the ground. Before it was mounted on the pole, the billboard was originally lying flat on the ground. The billboard weighs 3 pounds per square foot. Set up a definite integral for the work done in lifting this billboard up to where it now stands. Evaluate the integral and find the work done.

Hint: Slice the billboard in strips parallel to the straight edge.