Assignment 16 (11/3)

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This homework is due at the beginning of class on Friday 11/10*. You may cite results from class as appropriate. Unless otherwise stated, you must provide a complete explanation for your solutions, not simply an answer. You are encouraged to work together on these problems, but you must write up your solutions independently.*

You are encouraged to think about the problems marked with a ($\star$) *if you have time, but you don't need to hand them in.*

Remember that you can always use the result of the previous assignment problems without proof to solve the new assignment problems.

Problem 0$\star$

Over this week we will be covering chapter 15. Try to read the corresponding sections from book everyday after class. Once you have solved a homework problem, look up the nearby exercises to understand how else a similar problem could be formulated. Also look through all the examples in the section.

There will be a quiz next Monday.

Problem 1

Consider the isosceles triangle Ω bound by the three straight lines $y = 3x$, $y = -3x$, and $x = 1$. Suppose we have a solid S in 3 dimension that has its base on Ω and all of its vertical cross sections parallel to YZ-plane are semicircles (with diameter on XY-plane). Find the volume of S by integrating the area of the cross section as we talked about in class today.

Problem 2

Problems 15.1.$(35, 38, 39, 41)$.

Problem 3

Problems 15.2.$(25, 28, 35, 51)$.