

Name:

Math 241, Section F1H, Fall 2007
Graded HW Assignment 6, Due 10/8/07

1. **On doing double integrals.** For all but the simplest types of regions (e.g., rectangular), you should always start out by sketching the region R . Then read off the limits on x and y from this sketch by sweeping out the region vertically or horizontally. (You decide which. Often one approach is easier than the other; if you run into difficulties with one method, go back and do it the other way.) Next, use these x - and y -limits to express the region R in terms of inequalities on x and y of the form $\boxed{* \leq x \leq *}$, $\boxed{* \leq y \leq *}$, and set up a double integral of the form

$$(*) \quad \int_{x=*}^* \int_{y=*}^* * dydx \quad \text{or} \quad \int_{y=*}^* \int_{x=*}^* * dx dy$$

with suitable expressions in place of the asterisks. In doing so, keep in mind the **cardinal rule for double integrals**: *the outside integral must have constant limits.*

Once you have expressed the integral as an iterated integral in the form (*), most of the hard work is done, and the actual computation of the integral is (usually) routine.

2. **Problems 13.3: 30,31,32.** For these problem do only the “set-up” part, i.e., follow the above procedure up until the formula (*). (For the actual computation of the resulting integrals the book suggests using a computer algebra system, but for the set-up part this is not needed and wouldn’t be of any use.)
3. **Problem 13.3:37.** Note the hint in this problem: one order of integration here is a lot easier than the other. If you run into a tricky integral, go back and try doing things in the other order (i.e., use a vertical sweep instead of a horizontal one, or vice versa.)

Problems

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|-------------|--------------|
| 1. 13.1: 21 | 8. 13.3: 15 |
| 2. 13.1: 29 | 9. 13.3: 19 |
| 3. 13.1: 33 | 10. 13.3: 27 |
| | 11. 13.3: 30 |
| 4. 13.2: 15 | 12. 13.3: 31 |
| 5. 13.2: 19 | 13. 13.3: 32 |
| 6. 13.2: 31 | 14. 13.3: 35 |
| 7. 13.2: 33 | 15. 13.3: 37 |