

Reading Assignment # 10

Math 13 - Prof. Orellana

January 26, 2006

Read Sections 5.1 and 5.2 - Review integration by parts.

Don't forget to let me know the pages where you found the answers.

1. What physical interpretation do we give to the value of the definite integral over the interval $[a, b]$ for a positive function, $f(x) \geq 0$ for all x in the interval?
2. Read page 289-290 and tell me how do we generalize the concept of integrals in one variable calculus to two variables. Be precise in your answer. What physical quantity should an integral of a two variable function represent?
3. What is Cavalieri's Principle?
4. What is an iterated integral? Describe a method to calculate an iterated integral.
5. What does Proposition 1.1 say?
6. What is the difference between the integrals studied in Section 5.1 and those in Section 5.2?
7. What are the two notations used in your book for a closed interval?
8. Define and give a picture for a partition of a rectangle in \mathbb{R}^2 .
9. What does the Riemann sum in page 293 depends on? What does it mean to say "weighted sum"?
10. Give the definition of a double integral. Be very specific, in particular tell me what the conditions are in this definition. What is the "crucial idea" to remember about this definition?
11. Read the paragraph before Example 1 and tell me another way to view the double integral.

12. Read example 1 and the paragraph after the example and tell me what's the point of this example. What "fundamental difficulty" is simplified by Theorem 2.4?