

Math 3B, Midterm 1 Review

Spring 2007

The problems on the midterm will be similar to the ones from the homework assignments and quizzes. The most significant difference from the homework, however, is that you will be required to show your work and fully justify your answers. Also, questions that appear as multiple choice on the homework will not be multiple choice. The test will cover sections 4.10, 5.1 - 5.5 from Stewart. Below is an outline of the different topics you should know, along with lists of practice problems from Stewart.

1. Given a graph of a function $f(x)$, you should be able to
 - (a) Use rectangles to approximate the area under the graph. (**5.1** # 1; **5.2** # 5)
 - (b) Sketch a graph of an antiderivative of $f(x)$. (**4.10** #47; **5.3** # 3.)
2. You should be able to write an area or a definite integral as a limit of Riemann sums. (**5.1** # 19; **5.2** # 29.)
3. You should know that a definite integral represents a "net area" and be able to calculate areas using definite integrals. (**5.2** # 33, 36)
4. You should know the antiderivative/integration formulas for the basic functions as in the table on p. 406.
5. You should be able to use the Fundamental Theorem of Calculus, Part I, to find the derivative of a function defined as an integral. (**5.3** # 11, 49)
6. You should be able to use the Fundamental Theorem of Calculus, Part II, along with the properties of integrals from 5.2, to evaluate a definite integral. (**5.3** # 23, 31, 35)
7. You should be able to use substitution to evaluate indefinite and definite integrals. (**5.5** # 23, 27, 51, 63, 65)
8. Given a velocity or acceleration function and initial data, you should be able to find the position function and calculate displacement and distance travelled. (**5.1** #15; **5.4** #55)