

MATH 131, section 1 – Calculus for Physical and Life Sciences  
Review Sheet – Exam 2  
October 17, 2007

*General Information*

- The second exam of the semester will be given on Wednesday, October 24, 6:00 - 7:30pm *in Haberman 103*. If you have a conflict at that time, we will run the “second seating” at 8:00pm again.
- **Bring a photo ID to the exam.**
- The exam will be designed to take an hour but you will have an extra 30 minutes to work and check your solutions.
- You will be given a TI-30 scientific calculator for the exam which does NOT have graphing capabilities so be prepared to answer questions without your personal calculator. (Note: Some of you may have one of these calculators purchased for use in Chemistry courses here. That is also OK.)
- Use of cell phones, I-pods, and all other electronic devices *is not allowed* during the exam. Please leave such devices in your room or put them away in your backpack (make sure cell phones are *turned off*).

*What will be covered*

The first exam covers section 1.7, all of Chapter 2, and sections 3.1, 3.2. This includes specifically:

1. Parametric curves (section 1.7)
2. Limits (including one-sided and two-sided versions); calculating limits via algebraic manipulations and the limit laws for sums, products, quotients, the “squeeze theorem” etc.
3. Continuity and properties of continuous functions
4. How to tell  $\lim_{x \rightarrow a} f(x) = \pm\infty$ , what  $\lim_{x \rightarrow \pm\infty} f(x) = L$  means
5. Derivatives via the limit definition, derivative functions, interpretations of  $f'(a)$  as the slope of the tangent to  $y = f(x)$  at  $x = a$ , and as the rate of change of  $f(x)$  with respect to  $x$ .
6. What  $f'$  and  $f''$  say about  $f$  (relation of sign of  $f'$  to increasing or decreasing property of  $f(x)$ , relation of sign of  $f''$  and concavity)
7. Derivative rules for powers, exponentials, sums, constant multiples, products, quotients.

*How to prepare*

You should go over the homework problems as well as your class notes. Many of the problems and questions we discuss in class are excellent examples of test questions. I have also listed some sample problems from the text below. Answers can be found in the text.

We will review for the exam in class on Tuesday, October 23. Come prepared with specific questions if there are things you want to discuss.

*Suggested review problems*

Section 1.7/9, 13, 29, 33

Chapter 2 Review Problems/1, 3 - 15 odds, 21, 23, 25, 27, 31, 33, 35ab,37, 39, 41, 43.

Section 3.1/3 - 23 odds, 43, 47

Section 3.2/3, 5, 7, 9, 11, 13, 35