

MATH 131, section 1 – Calculus for Physical and Life Sciences  
Review Sheet – Exam 1  
September 12, 2007

*General Information*

- The first exam of the semester will be given on Wednesday, September 19, 6:00 - 7:30pm in *Haberlin 103*. If you have a conflict at that time, alternate provisions will be made, but you need to notify me as soon as possible.
- **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 the following sections from Chapter 1: sections 1.1, 1.2, 1.3, 1.5, and 1.6, plus Appendix C. This includes specifically:

1. Functions and different methods of representing them (verbal descriptions, tables of values, graphs, formulas)
2. The basic “catalog” of functions (linear, power, polynomial, rational, algebraic, exponential, trigonometric)
3. Techniques for constructing new functions from old ones (vertical and horizontal shifts, vertical and horizontal scaling, sums, products, quotients, compositions)
4. Inverse functions (know how to tell if a given function has an inverse function and how to describe the inverse function by a formula or a graph if it does)
5. Logarithm functions and their applications.
6. Trigonometric and inverse trigonometric functions.

*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 Chapter 1 Review below. Answers to even numbered problems are provided.

We will review for the exam in class on Tuesday, September 18. Come prepared with specific questions if there are things you want to discuss.

*Suggested review problems*

Chapter 1 Review Exercises, pp. 84 - 85: 1, 5, 7, 8, 9, 13, 15, 17, 19, 22, 24, 25, 28 parts b), c)

The answers to the odd problems are in the back of the book. The answers to the evens are:

8. Domain: all real  $x > 1$ ; Range: all real numbers
- 22.
- a)  $y = 6x + 3000$ . The graph is a straight line with slope 6 and  $y$  axis intercept at 3000.
  - b) The slope of 6 means that each additional toaster produced adds \$6 to the weekly production cost.
  - c) The  $y$ -intercept of 3000 represents the overhead cost - the cost incurred without producing anything.
24.  $y = \frac{(1-x)}{(2x-1)}$ .
- 28.
- b)  $t = -\ln((1000 - P)/(9P)) = \ln((9P)/(1000 - P))$ . This is the time required for the population to reach a given number  $P$ .
  - c)  $t = \ln(81)$  (which is approx. 4.4 years).