

Math 1500 Fall 2010
Exam 1 Review

This is just a guide to help you study. I do not guarantee that anything will or will not be on the exam based on this guide.

1 Basics

Tuesday, September 14, 2010 in class. No books or notes or cell phones. You may use a scientific calculator.

§1.1-§1.3, §1.5-§1.6, Appendix A (plus solving rational inequalities), Appendix B (except Distance Formula and Parallel and Perpendicular Lines)

2 Practice Problems

- pg. 73 **Concept Check**: 1, 3, 6, 8c-g, 9, 10, 11, 12
- pg. 74-75 **Exercises**: 1-7, 9, 10, 12-17, 19, 20, 22-26
- pg. 81: 3, 12b
- pg. A9 **Appendix A**: 1-12, 13-32 (ignore the part about the real number line), 43-45
- pg A15 **Appendix B**: 7-10, 21-28, 37-42

3 Suggestions

- Work lots and lots of problems, especially those on material you don't understand as well.
- When possible, ask yourself WHY you are solving a problem a certain way or WHY the result is true.
- Do not look at solutions unless you are desperate.
- Check your work!!

4 Sample Exam

1. Suppose f and g are two functions given by the data tables below.

x	f(x)	g(x)
1	4	3
2	2	-2
3	6	7
4	-1	1
5	3	1
6	1	0

- (a) What is $f(4)$?
- (b) What is $f^{-1}(3)$?
- (c) What is $(f \circ g)(5)$?

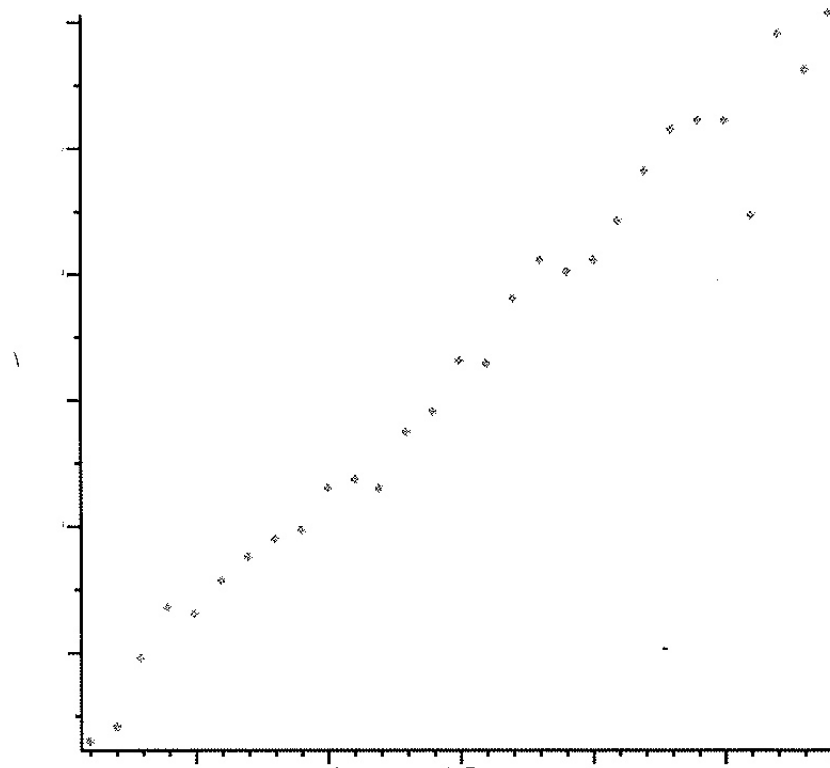
2. Find the domain and range of the following functions.

(a) $\sqrt{x^2 - 1}$

(b) $\frac{1}{x+2}$

3. Graph the function $f(x) = (x - 2)^3 + 5$ by hand, not by plotting points, but by starting with one of the standard functions and then applying the appropriate transformation.

4. Below is a set of data points. What type of function would you use to model the data? Why?



5. Determine whether f is even, odd, or neither.

(a) $f(x) = x^3 - 3x$

(b) $f(x) = \frac{1}{x^2}$

6. Find all x so that $\frac{x+3}{x-2} \leq 2$.

7. Solve each equation for x .

(a) $2^x + 4 = 7$

(b) $\log_3(2x - 1) - \log_3(x - 4) = 2$

8. Let $f(x) = \frac{1}{x+3}$ and $g(x) = \sqrt{x-1}$.

(a) What is $(f \circ g)(x)$?

(b) What is the domain of $(f \circ g)(x)$ and **explain** how you found it.

9. Without using a calculator, find the exact value of the following expressions.

(a) $\ln e^7 + e^{\ln 5}$

(b) $\log_3 9 + \log_3 6 - \log_3 2$

10. If $f(x) = x^2 - 1$, evaluate and simplify $\frac{f(x+h)-f(x)}{h}$.

11. Find a formula for the inverse of the function $f(x) = \frac{x-1}{x+3}$.

12. If $(3, -1)$ and $(2, 5)$ are two points on a line, what is the equation for line containing them?