Math 108 2nd Mid-Term Study Guide

For the 2nd Mid-Term you should be familiar with all the following.

1) How to transform a function
   - Vertical and Horizontal Shifts
   - Reflections
   - Dialations

2) What Odd and Even Functions are
   - How to tell if a function is odd or even

3) How to combine functions by
   - Addition, Subtraction, Multiplication and Division
   - You should know what this combination does to the domain and range of a function

4) How to combine functions by composition

5) What a one to one function is. What the horizontal line test is.

6) What an inverse function is. How to find the inverse of a function.

7) How to graph a quadratic function

Polynomials

8) How to determine end behavior

9) How to divide a polynomial using long division. Optionally by synthetic division.

10) The remainder theorem

11) The factor theorem

12) How to find the real roots of a polynomial function
   - Using the rational root theorem
   - Factoring by grouping
   - Recognize disguised quadratics

13) How to find the complex zeros of a polynomial function

14) What the multiplicity of a root is

15) How to graph a polynomial function

16) The conjugate root theorem

17) How to find a polynomial with specific roots

Rational Functions

18) Know what a rational function is

19) Know how to determine the end behavior of a rational function

20) Know how to find the vertical and horizontal asymptotes of a rational function

21) Know how to find the zeros of a rational function

22) Know how to find the y-intercept of a rational function

23) Know how to cancel common factors properly

24) Know how to graph a rational function

25) What it means for a function to be increasing or decreasing on an interval

26) What it means for a function to be an increasing or decreasing function

27) What exponential functions are

28) What growth and decay functions are

28) The laws of exponents

29) How to calculate the future value of an investment given the principle, interest and rate of compounding, including continuous.

30) What the number *e* is. What the function $f(x) = e^x$ is.

31) What a log function is

32) What the relationship between exponential and log functions is

33) What a natural log function is

34) The laws of exponents

35) The change of base formula for logs

36) How to solve equations with exponential and log expressions