Midterm 3 Topics List

Midterm 3 will cover material from Homework Assignments 6-7 and from chapters 21 to 25 (Exponential Functions up to Piecewise Defined Functions).

NOTE: Any and all homework questions are fair game to show up on the midterm, you should understand not just how to solve them, but also the techniques you used so that you could solve a similar problem (like a homework problem with different numbers).

Chapter Breakdowns:

Exponential Functions: Know the algebraic rules for exponential functions that we went over in class (also on pg. 149-150 in your textbook).   Know what the base of an exponential function is and how it effects the graph of the function (base greater than 1, less than 1 but greater than 0, and base=1). Understand the notion of e as a base and how you can have irrational numbers as bases. You will need to be able to simplify problems by changing every term to the same base (if possible) and then using the algebraic rules of exponents. You also need to be able to solve exponential equations for x (without using the logarithms from the later chapter).

Rational Functions: Know what a rational function is and how it relates to polynomial function. Know what the implied domain of a rational function is and how to find it. Know what a vertical asymptote is and how to find it, as well as how to find x-intercepts. Know how to find the leading order term of a rational function and how this relates to the behavior of the graph of the function to the "far left and far right". Finally be able to pull everything together to graph the shape of a rational function.

Logarithms: Know what a logarithm is and how it relates to an exponential (i.e. the inverse of an exponential function with base a is a logarithm with base a). Know how to solve logarithm equations for x, and how to simplify logarithms (like $\log_3(81)=4$). Know the algebraic rules for logarithmic functions (page 175), as well as how to change base .

Exponential and Logarithmic Equations: Know how to solve exponential equations (the 3 step procedure on pg. 182). Know how to solve Logarithmic equations (the 3 step procedure on pg. 184)

Piecewise Defined Functions: Be familiar with what a piecewise defined function looks like, as well as how to graph them. Know what the absolute value function looks like, |x|. Know how to write the absolute value function as a piecewise defined function and how to graph it. Know how to use this to solve absolute value equations (like |x-2|>4)