Math 229
Exam 4 - Review Sheet

Chapter 13: Exponential and Logarithmic Functions

Section 13.1: Exponential Functions
• Know the definition of an exponential function.
• Know and be able to apply the Laws of Exponents.
• Understand the basic shape of the Graph of an exponential function.
• Know the Properties of Exponential Functions (domain, range, intercept, increasing/decreasing behavior, concavity)
• Know the definition of the natural base, "e".
• Memorize and be able to apply both Compound Interest Formula and the Continuous growth/decay formula.

Section 13.2: Logarithmic Functions
• Know the definition of a Logarithmic Function.
• Understand how to perform basic computations involving logarithms and be able to translate an logarithm into exponential form.
• Memorize and be able to apply the Laws of Logarithms.
• Know the basic shape and properties of graphs of Logarithmic Functions (domain, range, intercept, increasing/decreasing behavior, concavity).
• Understand the notation: log (base 10), and the natural logarithm: ln (base e).

Section 13.3: Differentiation of Exponential Functions
• Memorize and be able to apply the basic differentiation formula for Exponential Functions.
• Understand and be able to apply the Chain Rule for Exponential functions and be able to combine this with other differentiation rules.

Section 13.4: Differentiation of Logarithmic Functions
• Memorize and be able to apply the basic differentiation formula for the Natural Logarithm Function.
• Understand and be able to apply the Chain Rule for Logarithmic Functions and be able to combine this with other differentiation rules.
• Logarithmic Differentiation [NOT Tested!]
• Be able to solve application problems involving the derivatives Exponential and Logarithmic functions (finding tangent lines, increasing/decreasing intervals, concavity, absolute extrema, and inflection points)

Chapter 13 Review Problems: # (1, 5, 8, 9, 11, 14, 21, 30, 35, 37, 39, 43)

Chapter 14: Integration

Section 14.1: Antiderivatives and the Rules of Integration
• Know the definition of an the antiderivative of a function.
• Be able to evaluate Indefinite Integrals by applying integration rules (see integration handout)
• Be able to solve Initial Value Problems.

Section 14.3 and 14.4: The Definite Integral and the Fundamental Theorem of Calculus
• Understand how to approximate the area under a function using rectangles.
• Memorize the Statement of the FTC and be able to apply it in order to finding the area under a curve by evaluating a definite integral.
• Be able to solve applications involving velocity and marginal functions using definite integrals.

Section 14.5: Evaluating Definite Integrals
• Memorize and be able to apply the properties of definite integrals.
• Be able to find the average value of a function on a closed interval.

Section 14.6: The Area Between Two Curves
• Know the basic method for finding the area between two functions.
• Understand how to use definite integrals to find the Area of regions under the graph of a function or enclosed by the graphs of more than one function.

Chapter 14 Review Problems: # (1, 5, 9, 12, 21, 23, 33, 35, 39, 43, 45, 49, 50)