Review sheet for exam 2

The best way to study for the exam is to learn how to do all of the assigned practice problems. If you run out of problems, learn to do all of the problems in the book! Here are some of the chapter review problems you should try:

- Chapter 3 review: Concept check (Skip 2o-t and 5), True-False Quiz. Also 1-42, 44, 49, 50, 51-53, 57-59, 60, 61, 65, 66, 69, 70, 72-78, 79-81, 83, 84, 85, 89, 97-101, 106-108

The following is a list of the topics that I think are important. Note that we did not discuss 3.8 or 3.11 in class. These topics will not appear on the exam.

- 3.1 Derivatives of polynomials and exponentials

    - Know the power rule.
    - Be able to compute derivatives of sums of power functions and polynomials.
    - Know the derivative of e^x.

- 3.2 The product and quotient rules

    - Be an expert at using the product and quotient rules.

- 3.3 Derivatives of trigonometric functions

    - Know derivatives of sin, cos, tan, csc, sec, cot.
    - Know how to compute various trigonometric limits using

$$\lim_{x \to 0} \frac{\sin x}{x} = 1$$

- 3.4 The chain rule

    - Know the statement of and how to use the chain rule.
    - Know the derivative of a^x.

- 3.5 Implicit differentiation

    - Be able to use implicit differentiation.
    - Know the formula for the derivative of an inverse.
    - Memorize the derivative of arcsin and arctan. Be able to derive the derivative of any of the inverse trigonometric functions.

- 3.6 Derivatives of logarithmic functions.

- Know the derivative of $\log_a x$.

- Be able to use logarithmic differentiation.

- 3.7 Derivative is rate of change

  - Understand that the derivative of a function gives the instantaneous rate of change of the function.

- 3.9 Related rates

  - Be able to do related rates problems.