Math 151 Topics

Chapter 2: Limits

- Definition of a limit as in §2.2
- One-sided limits - §2.2
- Infinite limits/Vertical asymptotes - §2.2
- Evaluating limits - §2.3
- Squeeze Theorem - §2.3
- Definition of continuous function - §2.5
- Types of discontinuity - §2.5
- Limits of continuous functions - §2.5
- Intermediate Value Theorem - §2.5
- Limits at infinity/Horizontal Asymptotes - §2.6
- Using limits to compute slopes of tangent lines or velocity of a position function - §2.7
- Definition of a derivative - §2.7
- Regarding derivative as a rate of change - §2.7
- The derivative function - §2.8
- Graphing f' given a graph of f - §2.8
- Estimating values of f' given a table - §2.8

Chapter 3: Differentiation Rules

- Derivatives for the following types of functions:
  - Polynom./Radical/Rational Function - §3.1
  - Exponential (a^x) - §3.1, 3.4
  - Trigonometric - §3.3
  - Inverse Trigonometric - §3.5
  - Logarithmic - §3.6
- Differentiation Rules:
  - Power Rule - §3.1
  - Sum and Difference Rule - §3.1
  - Constant Multiple Rule - §3.1
  - Product & Quotient Rule - §3.2
  - Chain Rule - §3.4
- Implicit Differentiation - §3.5
- Logarithmic Differentiation - §3.6
- Derivatives as a rate of change in applied problems - §3.7
- Related Rates - §3.9
- Linear Approximation/Linearizations - §3.10

Chapter 10: Parametric Equations

- Drawing curves and finding points on a curve described by parametric eqns. - §10.1
- Finding $x'(t)$ and $y'(t)$ for parametric equations $x(t)$ and $y(t)$ - §10.2
- Finding the slope of the tangents ($\frac{dy}{dx}$) of a parametric curve - §10.2

Chapter 4: Applications of Differentiation

- Absolute and local maximums and minimums - §4.1
- Extreme Value Theorem - §4.1
- Critical Numbers - §4.1
- The Closed Interval Method for finding absolute extreme values - §4.1
- Determining if a function f is increasing or decreasing given the sign of the derivative f' - §4.3
- Determining if a function f is concave up or down given the sign of the 2nd derivative f'' - §4.3
- First and Second Derivative Tests for finding local extreme values - §4.3
- Rolle's Theorem & the Mean Value Theorem - §4.2
- L'Hospital's Rule - §4.4
- Optimization problems - §4.7

Make sure to review the assigned homework problems, old quizzes, and exam 1 and 2. Taking each quiz again is a good idea. You can print out blank quizzes on the class website.

Make sure to **pace yourself** by starting to study at least a week ahead of time. For example, you can take one or two quizzes each day to help you identify topics that you need to study further.