

**CHAPTER 2:** Limits, Definition of Derivative.

- 2.1: Introduction to tangents and velocity.
- 2.2: Introduction to limits (making a table).
- 2.3: Using algebra to do limits (factor/expand/simplify fractions/conj).
- 2.5: Continuity (function value equal limit value).
- 2.6: Limits at infinity/Horizontal Asymptotes (multiply top/bot by  $1/x^n$ ).
- 2.7: Taking the limit of secant slopes to get the tangent slope.
- 2.8: Talking about the derivative function (horizontal tangent/increasing/decreasing/vertical tangent).

**Finding Limits:** Here (once again) are the steps to find a limit:

1. Do any obvious simplification and plug in the number. If it evaluates to a number or if you know what the function looks like, you are DONE!
2. If the numerator goes to a number other than zero and the denominator goes to zero, then the answer is either  $\infty$ ,  $-\infty$ , or DNE. To figure out which one, you simplify look at the expression and see if it is positive or negative for numbers slightly larger and slightly smaller than the limiting value.
3. If it is  $0/0$  or some other indeterminant form, then you either use algebra to simplify and cancel or use L'Hopital's rule.

**CHAPTER 3:** Derivative Rules, Linear Approx and Related Rates.

- 3.1: Derivative rules for powers and exponentials. ( $x^n$  and  $e^x$ ).
- 3.2: Product and Quotient Rules.
- 3.3: The six trig derivatives.
- 3.4: Chain rule.
- 3.5: Implicit Differentiation. We also got our six inverse trig derivatives.
- 3.6: Derivatives of log's and Logarithmic Differentiation.
- 3.9: Related Rates.
- 3.10: Linear approximation.  
Throughout chapter 3, we also did geometric questions about tangent and normal lines. And we did some application questions about distance, velocity and acceleration.

**CHAPTER 10:** Parametric Equations.

- 10.1: Basics of parametric equations.  
Know the equations for circular motion and linear motion.
- 10.2: Slope of the tangent line and speed for parametric equations.

**CHAPTER 4:** Max/Min, Critical Points, Inflection, L'Hopital's Rule.

- 4.1: Definitions of critical points, local max/min and absolute max/min. We gave the method for finding absolute max/min.
- 4.3: Definitions of concavity and inflection points. We gave the first and second derivative tests to classify critical numbers. We also generally discussed how to draw number lines using the first and second derivative that give general information about the original function.
- 4.4: L'Hopital's rule.
- 4.5: Curve sketching (finding asymptotes and using first and second derivative number lines to sketch a graph).
- 4.7: Optimization (using given information to find a one variable function for the quantity you want to optimize, then using the absolute max/min method).