

1. Limits: right, left, and two-sided. Also, limits as  $x \rightarrow \infty$ , that is infinity (horizontal asymptotes. And, finding limits (and derivatives from the definition) using one of the three discussed techniques
  - (a) rationalizing the numerator or denominator
  - (b) subtraction of fractions
  - (c) expansion of powers
2. Building function
  - (a) combine functions using the four arithmetic operations ( $f \cdot g, f/g, f + g$ , and  $f - g$ )
  - (b) combine functions using composition ( $f \circ g$ )
3. Finding Derivatives
  - (a) calculating them from the definition
  - (b) using formulas, especially the Chain Rule
4. Using the first and 2nd derivatives. You need to know the Test Interval Technique in order to produce the sign charts for  $f$ ,  $f'$ , and  $f''$ . You should be able to say what the sign charts for  $f'$  and  $f''$  tell you about the function  $f$ .
  - (a) to find tangent lines
  - (b) intervals over which the function is increasing / decreasing
  - (c) intervals over which the function is concave up / down
  - (d) relative max and min
  - (e) classification of max and min
  - (f) understand the geometry of the derivative. Given the graph of a function, sketch the graph of the derivative, and given the derivative of a function sketch an antiderivative.
5. Exponential models
6. Chapter 6, section 6.1-6.6.
  - (a) Find antiderivatives using substitution
  - (b) Find areas of regions bounded by lines and graphs of functions