

Calculus AB – Quick Topic Review List

Note – This is intended as a quick way to refresh your memory about the concepts covered in this course, along with a chapter reference so you know where to go if you want to review a topic further. I am not claiming that all items on this list are on the final, nor am I claiming that every concept on the final has been included on this list. I would strongly suggest that you browse this list and look up concepts that you are unsure about.

Semester I

CHAPTER ONE: Prerequisites for Calculus (note: exam questions will not directly target these subjects, but presumes a working knowledge of these types of functions)

- Graphing Functions - including polynomial, exponential, logarithmic (§1.5), trigonometric (§1.6)
- Domain, range, even/odd symmetry, piecewise functions

CHAPTER TWO: Limits and Continuity

- Limits (including where $x \rightarrow \pm\infty$, and where $f(x) \rightarrow \pm\infty$ as $x \rightarrow c$) (§2.1)
- End Behavior Models, End Behavior Asymptotes (§2.2)
- Continuity
 - what does it mean for a function to be continuous? (§2.3)
 - how can a function be discontinuous? (§2.3)
 - Intermediate Value Theorem (§2.3)
- Average Rate of Change (§2.4)
- Tangent Lines to curves (§2.4)

CHAPTER THREE: Derivatives

- Definition of the derivative (§3.1)
- Differentiability (what does it mean for a function to be differentiable?) (§3.2)
- Basic differentiation rules (including Product Rule and Quotient Rule!) (§3.3)
- Position/Velocity/Acceleration and rates of change (§3.4)
- Derivatives of trig functions (§3.5)

CHAPTER FOUR:

- Chain Rule (§4.1)
- Implicit Differentiation (§4.2)
- Derivatives of inverse trig functions (§4.3)
- Derivatives of exponential and log functions (§4.4)

CHAPTER FIVE: Applications of Derivatives

- Extreme Values of Functions (absolute/relative extrema, critical points, etc) (§5.1)
- Mean Value Theorem for Derivatives (§5.2)
- Increasing/Decreasing functions (§5.2)
- How f' and f'' relate to the graph of f (§5.3)
- Optimization (max/min applications) (§5.4)
- Linearization (§5.5)
- Related Rates (§5.6)

CHAPTER NINE: Sequences, L'Hospital's Rule, and Improper Integrals

- L'Hospital's Rule (§9.2)