AP Calculus BC CEC – Wolverton

Test I Topic List

Limits

Evaluating Indeterminate Limits

- Review methods for evaluating indeterminate limits including function composition (thm. 1.5), cancellation (thm. 1.7), squeeze theorem (1.8), sine and cosine small angle limits (thm. 1.9), Division by infinity (thm. 3.10) and any other limit methods that came up in homework.

Limit Existence

- Know conditions for the existence of a limit (p.51) and what can cause a limit to not exist.
- Understand the difference between a limit being indeterminant and non-existant.

Continuity

- Know the definition of continuity. (p.70)
- Be able to identify the graph of a discontinuity.

Limits at Infinity & Asymptotes

- Review the techniques for evaluating limits at infinity by factoring 1/x^n to create a compound fraction (3.5 homework)
- know the limit definitions of asymptotes (p. 85 , p.199) and how to find them using limits

Derivatives

Definition of the Derivative

- Know the limit definition of the derivative (p. 99), and its relationship to the tangent line problem.
- Review how to take a derivative by using limit methods.
- Review all conditions for differentiability and what conditions cause a derivative to not exist (p 101-103).

Derivative Rules

- Know the derivative rules for **all** elementary functions (p. 376) and how to use them.
- Know derivative rule for inverse functions (p. 345) and how to use it

Derivative Interpretation

- Know how to construct a tangent line for a curve using its derivative or constrain a function using known tangent lines to solve for unknowns (see homework problems in ch 3).
- Know the first and second derivative tests (p. 181 p. 194)
- Know how to find extrema, and the significance of critical values – including f’(x) DNE.
- Know the definition for points of inflection and how to locate them with f’’(x).

Implicit differentiation, Related Rates, Optimization

- Review general methods and approaches for these types of problems in your homework as needed.