
REVIEW TEST 1

Chapters 2 and 3 (3.1 – 3.9)

Chapter 2 – Limits and Continuity

After completing this section, you should:

- know the definition of the limit of a function at a point
- be able to find limits given a graph
- be able to calculate limits using the Limit Laws
- know and be able to apply the Sandwich Theorem
- be able to calculate one-sided limits and infinite limits
- know the definition of a function continuous at a point
- be able to recognize points of discontinuity
- know the definition of the derivative of a function at a point
- be able to calculate the derivative of a function using the definition
- be able to find the equation of the tangent line to a graph at a point
- be able to find vertical and horizontal tangents to a graph
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Chapter 3 – Differentiation

After completing this section, you should:

- be able to find the left-hand and right-hand derivatives of a function using the definition
- know the differentiation rules for polynomials, exponentials, products, and quotients
- know how to find various instantaneous rates of change (velocity, acceleration, marginal cost, etc)
- know the differentiation rules for trigonometric functions and their inverses, as well as for exponential and logarithmic functions
- know and be able to use the Chain Rule
- be able to use implicit differentiation to find the derivative of a function
- be able to find derivatives of higher order
- be able to use logarithmic differentiation to find the derivative of a function
- be able to solve related rates applications

You should know how to prove formally the following theorems and properties:

Section 3.1 – Theorem 1 (Differentiation implies continuity)

Section 3.2 – Rule 1 (Derivative of a constant)
Rule 3 (Constant Multiple Rule)
Rule 5 (Derivative Product Rule)

Section 3.4 – Rule page 182 (Derivative of Sine)
Rule page 183 (Derivative of Cosine)

Section 3.7 – Rule page 216 (Derivative of a^x)

You should study all quizzes and all examples done in class, as well as your homework.