

# MATH 201 COURSE OUTLINE

## Topics

- A. Review
  - 1. Lines
  - 2. Functions
  - 3. Absolute value inequities
  - 4. Rational inequalities
  - 5. Curve sketching aids: intercepts, asymptotes, symmetry
  
- B. Limits
  - 1. Intuitive approach
  - 2. Formal definition
  - 3. Evaluations techniques
  - 4. Continuity
  
- C. Derivative
  - 1. Definition
  - 2. Tangent lines
  - 3. Increasing and decreasing
  - 4. Displacement, velocity, acceleration
  - 5. Product rule
  - 6. Quotient rule
  - 7. Chain rule
  - 8. Implicit differentiation
  - 9. Mean value theorem
  - 10. First derivative application
  - 11. Second derivative applications
  - 12. Curve sketching
  - 13. Max/min of a function on an interval
  - 14. Relative max/min word problems
  
- D. Differentials
  - 1. Definition and uses
  - 2. Finding derivatives via differentials
  - 3. Related rates
  - 4. Newton's approximation
  
- E. Integrals
  - 1. Area approximations
  - 2. Area with summation formula
  - 3. Definition of integral
  - 4. Anti-derivatives
  - 5. Displacement, velocity, acceleration
  - 6. Fundamental theorem
  - 7. Area

## **MATH 201 COURSE OUTLINE (CONTINUED)**

- E. Integrals (Continued)**
- 8. Area between curves**
  - 9. Riemann sums**
  - 10. Mean value theorem**
  - 11. Integration by substitution**
  - 12. Volume: disc method**
  - 13. Volume: shell method**
  - 14. Average value of a function**