



Mathematics 251

Calculus I

(see Course Descriptions for the applicable academic year: <http://www.ucalgary.ca/pubs/calendar/>)

Syllabus

Topics

- Equations of lines
- Inequalities, signs of factored expressions
- Functions including the definitions and properties of absolute value, power, polynomial, rational, trigonometric, exponential, and logarithmic functions
- Composition of functions
- Definitions and calculational methods for limits
- Horizontal and vertical asymptotes
- Continuity, Intermediate value theorem
- Derivative, definition and geometrical interpretation
- Derivative as rate of change; velocity and acceleration
- Rules of differentiation, differentiation formulas for power, trigonometric, exponential and logarithmic functions
- Chain rule, Implicit differentiation
- Linear approximation to a differentiable function
- Maxima and minima; extreme value theorem; mean value theorem
- Increasing and decreasing functions. Concavity
- First derivative test; second derivative test
- Curve sketching
- Applied maximum - minimum problems
- Antiderivatives; integration formulas
- Area, Definite integral
- Fundamental theorem of calculus
- Integration by substitution

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2005:08:01

Prerequisite change: 2009:07:01

EC:jml