Course name

Introduction to calculus 45S (half credit)

Course summary and expectations

* Welcome to Grade 12 Introduction to Calculus! This course builds upon the pre-calculus topics you were introduced to in Grade 12 Pre-Calculus Mathematics.
* Many of the skills that you have already learned will be used as you solve problems and learn new skills along the way. This course helps you develop the skills, ideas, and confidence you will need to continue studying mathematics in the future.
* A module is due about once a month. A module completion requires you to read the content, do the practice problems, hand in the assignments, and submit the test.

Module listing

Module 1: Limits

* limits and rates of change
* evaluating limits graphically
* properties of limits
* continuity of limits
* methods of evaluating limits
* limits at infinity

Module 2: Derivatives

* definition and differentiability
* differentiation rules
* equations of tangent lines
* higher order derivatives
* sketching first and second order derivatives
* the product, chain, and quotient rules
* applications of derivatives

Module 3: The chain rule and its applications

* implicit differentiation
* related rates

Module 4: Extreme values; curve sketching and optimization problems

* extreme value theorem
* mean value theorem
* curve sketching and the first/second derivative
* algorithm for curve sketching

Evaluation/grading summary

Assignments: 17 module assignments worth 87 marks.

Tests: 4 module tests worth 208 marks. Free response questions.

Exam: 77 marks composed of about 15 multiple choice questions then free response.