Argyle Secondary School Math Department
Calculus 12 Course Outline

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Calculus 12 (https://curriculum.gov.bc.ca/curriculum/mathematics/12/calculus)

BIG IDEAS

The **concept of a limit** is foundational to calculus.	Differential calculus develops the concept of **instantaneous rate of change**.	Integral calculus develops the concept of determining a product involving a **continuously changing** quantity over an interval.	Derivatives and integrals are **inversely related**.

CURRICULAR COMPETENCIES:
Students are expected to be able to do the following:

Reasoning and modeling
- Develop thinking strategies to solve puzzles and play games
- Explore, analyze, and apply mathematical ideas using reason, technology, and other tools
- Estimate reasonably and demonstrate fluent, flexible, and strategic thinking about number
- Model with mathematics in situational contexts
- Think creatively and with curiosity and wonder when exploring problems

Understanding and solving
- Develop, demonstrate, and apply conceptual understanding of mathematical ideas through play, story, inquiry, and problem solving
- Visualize to explore and illustrate mathematical concepts and relationships
- Apply flexible and strategic approaches to solve problems
- Solve problems with persistence and a positive disposition
- Engage in problem-solving experiences connected with place, story, cultural practices, and perspectives relevant to local First Peoples communities, the local community, and other cultures

Communicating and representing
- Explain and justify mathematical ideas and decisions in many ways
- Represent mathematical ideas in concrete, pictorial, and symbolic forms
- Use mathematical vocabulary and language to contribute to discussions in the classroom
- Take risks when offering ideas in classroom discourse

Connecting and reflecting
- Reflect on mathematical thinking
- Connect mathematical concepts with each other, other areas, and personal interests
- Use mistakes as opportunities to advance learning
- Incorporate First Peoples worldviews, perspectives, knowledge, and practices to make connections with mathematical concepts

CONTENT:
Students are expected to know the following:

- **functions** and graphs
- **limits:**
  - left and right limits
  - limits to infinity
  - continuity
- **differentiation:**
  - rate of change
  - differentiation rules
  - higher order, implicit
  - applications
- **integration:**
  - approximations
  - fundamental theorem of calculus
  - methods of integration
  - applications

RESOURCE MATERIALS:
- Textbook: Stewart, James. Single Variable Calculus: Early Transcendentals AP Edition. 6th ed.
- Locally developed supplemental packages
- **Scientific or Graphing Calculator required**

MARKS ASSIGNMENT:
- 80% Coursework
- 20% Final Exam

Optional - AP Calculus AB exam In May. (Not for marks)

CLASS SUPPLIES

It is essential that you come to class prepared. All students must bring a notebook for homework, a binder with lined papers and some sheets of graph paper, a pencil, an eraser, and a scientific calculator or graphing calculator. Students are NOT allowed to use their cellphones in Math class at any time.

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(Student signature) (Parent / Guardian signature)