Pre-Calculus 11: Course Syllabus

Website Resource: www.bcmath.ca

Curriculum: BC Ministry of Education (New Curriculum)

Course Overview

Pre-Calculus 11 is designed to provide students with the mathematical understandings and critical-thinking skills identified for entry into post-secondary studies in programs that require the study of theoretical calculus (Science, Engineering, Business, and Medicine). The course focuses on mathematical fluency, algebraic reasoning, and the ability to generalize relationships through abstract thinking.

Big Ideas (BC Curriculum)

1. **Algebra** allows us to generalize relationships through abstract thinking.

2. The meanings of, and connections between, **operations** extend to powers, radicals, and polynomials.

3. **Quadratic relationships** are prevalent in the world around us.

4. **Trigonometry** involves using proportional reasoning to solve indirect measurement problems.

Course Outline & Chapter Breakdown

The following chapters represent the learning modules available on **BCMath.ca**. Each unit includes PowerPoint lessons, printable worksheets, and practice quizzes.

Chapter 0: Algebraic Foundations

- **Focus:** Strengthening the essential algebraic skills required for Math 11.

- **Key Topics:** Factoring (GCF, Trinomials, Difference of Squares), simplifying expressions, combining like terms, and isolating variables.

Chapter 1: Sequences and Series

- **Focus:** Recognizing patterns and calculating sums of mathematical progressions.

- **Key Topics:** Arithmetic and Geometric sequences, Arithmetic and Geometric series, Infinite geometric series, and Sigma notation.

Chapter 2: Trigonometry

- **Focus:** Extending right-triangle trigonometry to non-right triangles and the coordinate plane.

- **Key Topics:** Angles in standard position, Reference angles, Special triangles (30-60-90, 45-45-90), Sine Law, Cosine Law, and the Ambiguous Case.

Chapter 3: Radical Expressions and Equations

- **Focus:** Performing operations with irrational numbers and solving radical equations.

- **Key Topics:** Simplifying radicals, Adding/Subtracting/Multiplying/Dividing radicals, Rationalizing denominators, and solving Radical Equations (identifying extraneous roots).

Chapter 4: Quadratic Functions

- **Focus:** Analyzing the properties and graphs of parabolas.

- **Key Topics:** Graphing in Vertex Form $y = a(x - p)^2 + q$, General Form $y = ax^2 + bx + c$, Completing the Square, and finding Domain and Range.

Chapter 5: Quadratic Equations

- **Focus:** Solving quadratic equations using multiple algebraic strategies.

- **Key Topics:** Solving by factoring, the Quadratic Formula, the Discriminant (nature of the roots), and solving Quadratic Word Problems (optimization, revenue, and physics applications).

Chapter 6: Rational Expressions and Equations

- **Focus:** Working with algebraic fractions and non-permissible values.

- **Key Topics:** Multiplying and Dividing rational expressions, Adding and Subtracting (LCD), and solving Rational Equations.

Chapter 7: Absolute Value and Reciprocal Functions

- **Focus:** Understanding absolute value as distance and exploring reciprocal relationships.

- **Key Topics:** Evaluating absolute value, Graphing absolute value functions, solving absolute value equations, and graphing reciprocal functions $y = \dfrac{1}{f(x)}$.

Chapter 8: Systems of Equations and Inequalities

- **Focus:** Finding solutions for multiple functions and shaded regions.

- **Key Topics:** Solving Linear-Quadratic and Quadratic-Quadratic systems (graphically and algebraically), and Linear/Quadratic Inequalities in one and two variables.

Chapter 9: Financial Literacy

- **Focus:** Applying mathematics to real-world financial scenarios.

- **Key Topics:** Compound interest, investments, loans, and credit cards.

Learning Resources at BCMath.ca

- **PowerPoint Lessons:** Ready-to-use classroom presentations for every section.

- **Homework Assignments:** PDF worksheets tailored to the BC curriculum.

- **Solution Keys:** Detailed answer keys for self-assessment.

- **Practice Tests/Quizzes:** Chapter reviews and practice exams to prepare for unit tests.

Assessment & Success

To be successful in this course, students should:

1. **Develop Fluency:** Practice algebraic steps until they become second nature.

2. **Analyze Errors:** Use the provided solution keys not just for answers, but to find where logic went wrong.

3. **Collaborate:** Use the resources to facilitate discussion between teachers, students, and parents.