

**Session 2023-2024**  
**Panorama Ridge Secondary School.**  
**Room Number: C003**  
**Pre-Calculus 12 Course Information**

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**Room :** C003

**General:** Math education aims to ensure that citizens are numerate and have mathematical habits of mind. It develops skills and processes that learners can use to critically analyze information and provides the fundamentals on which mathematical specialties and professional applications of mathematics are built. This course has been designed to develop deep mathematical understanding and fluency, logical reasoning, analytical thought, and creative thinking. There is a focus on concepts related to transformations of functions, trigonometric functions equations and identities, exponential, logarithmic, polynomial, and rational functions along with geometric series. Students actively investigate problems and find solutions. This enables them to develop a willingness to take risks, experiment, and make logical guesses. Students will learn through both their successes and their failures, developing perseverance, competence, and confidence in mathematics.

Three curricular elements – the Big Ideas, Curricular Competencies, and Content – link the knowing, doing, and understanding of mathematics learning. More information is available at <https://curriculum.gov.bc.ca/curriculum/mathematics/12/pre-calculus>

**Big Ideas**

Using <b>inverses</b> is the foundation of solving equations and can be extended to relationships between functions.	Understanding the characteristics of families of <b>functions</b> allows us to model and understand relationships and to build connections between classes of functions.	<b>Transformations</b> of shapes extend to functions and relations in all of their representations.
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**Learning Standards**

Curricular Competencies	Content
<p><i>Students are expected to do the following:</i></p> <p><b>Reasoning and modelling</b></p> <ul style="list-style-type: none"> <li>• Develop <b>thinking strategies</b> to solve puzzles and play games.</li> <li>• Explore, <b>analyze</b>, and apply mathematical ideas using <b>reason, technology</b>, and <b>other tools</b>.</li> </ul>	<p><i>Students are expected to know the following:</i></p> <ul style="list-style-type: none"> <li>• <b>transformations</b> of functions and relations</li> <li>• <b>exponential</b> functions and equations</li> <li>• <b>geometric</b> sequences and series</li> <li>• <b>logarithms:</b> operations, functions, and equations</li> </ul>

- **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

- **polynomial** functions and equations
- **rational** functions
- **trigonometry:** functions, equations, and identities

**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**

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| <ul style="list-style-type: none"><li>• <b>Incorporate</b> First Peoples worldviews, perspectives, <b>knowledge</b>, and <b>practices</b> to make connections with mathematical concepts</li></ul> |  |
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## Core Competencies

The Core Competencies are sets of intellectual, personal, and social and emotional proficiencies that all students need in order to engage in deep, lifelong learning. Students develop Core Competencies when they are engaged in the “doing” – the Curricular Competencies – within a learning area, in our case Pre-Calculus 12.

**There are three Core Competencies:**



**Communication** -The Communication competency encompasses the knowledge, skills, processes and dispositions we associate with interactions with others. Through their communication, students acquire, develop and transform ideas and information, and make connections with others to share their ideas, express their individuality, further their learning, and get things done. The communication competency is fundamental to finding satisfaction, purpose and joy.



**Thinking** - The Thinking competency encompasses the knowledge, skills and processes we associate with intellectual development. It is through their competency as thinkers that students take subject-specific concepts and content and transform them into a new understanding. Thinking competence includes specific thinking skills as well as habits of mind, and metacognitive awareness. These are used to process information from a variety of sources, including thoughts and feelings that arise from the subconscious and unconscious mind and from embodied cognition, to create new understandings.



**Personal and Social** - The Personal and Social competency is the set of abilities that relate to students' identity in the world, both as individuals and as members of their community and society. Personal and

social competency encompasses what students need to thrive as individuals, to understand and care about themselves and others, and to find and achieve their purposes in the world.

Sub-competencies are smaller competencies that fit within a Core-Competency. The profiles for each sub-competency will be added to Teams files. We will refer to them throughout the course.

### **Learning Space:**

To deepen our learning experience, aside from classroom engagement we will use online platforms such as Microsoft Teams, Schoology, Desmos and others. The base textbook is Pre-Calculus 12, McGraw-Hill Ryerson, 2012. (a pdf version is available through a google search).

Other supportive recommended materials include:

1. CEMC Courseware

<https://courseware.cemc.uwaterloo.ca/8>

2. WCLN Westerns Canadian Learning Network

<https://wcln.ca/> ( you need to create an account)

### **Assessment:**

Academic assessment would be based on quizzes and unit tests. Even though class participation and assigned work would be as important as written assessments. There will not be any final or mid term exam. However, consistent tests would be happening throughout the semester. Every assessment is important, so it is good to go with the pace of the class.

No redo for quizzes. Student can request to the teacher for redo of any unit tests (at the most two) if they are not achieving the goal. Student must request through Teams before showing up redo test.

Quizzes = 30 %

Unit Tests = 70%

### **Homework / Classwork Practice Assignments:**

Students will receive assignments daily. The list of assignments offers three possible challenge levels to choose from. Students are responsible for completing the assignments daily. Students' work must be shown clearly, marked, corrected and completed on time.

To do the practice work:

-have an organized physical space and access to math binder, graph and lined paper

-have a pencil, eraser, highlighter, red pen, ruler, scientific calculator, and pens in different colors

**Classroom Behaviour:**

Respectful, inclusive, and positive behaviour is expected from all. Students are to be courteous, cooperative, and kind to one another. This includes coming on time and ready to work, listening when appropriate, staying on task, and keeping talk relevant to the work at hand.

*Best wishes for a successful learning experience!*