

Course: Pre-Calculus 12

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Course Description:

This course is designed to support students in developing the mathematical understandings and competencies identified for entry into post-secondary programs that require the study of theoretical calculus. Curricular content expands functions and equations to include polynomial, exponential, logarithmic, and trigonometric. Students will explore reasoning, problem solving, communicating, connecting and reflecting within the content of this course.

Inquiry Questions:

- How are inverses used to determine mathematical solutions?
- How can families of function be transformed?
- How are trigonometric and logarithmic functions used in daily situations?

Summer Learning Beliefs:

Summer Learning provides an engaging learning environment where all students can challenge themselves academically and fulfill their learning goals. To ensure this, students will:

- abide by the student Code of Conduct
- adhere to the Academic Honesty Policy
- adhere to the *Summer Learning* Student Engagement policy
- respect themselves and others
- attend every class and be punctual
- inquire, think, and participate to the best of their ability
- access technology in class when instructed to do so and for learning purposes only
- challenge themselves and have fun learning

All Summer Learning policies can be accessed at:

<https://www.sd44.ca/school/summer/policies/Pages/default>.

Course Syllabus:

<p>Curricular Competencies</p>	<p>What the students will do:</p> <p>Reasoning and Analyzing</p> <ul style="list-style-type: none"> • Use reasoning and logic to analyze and apply mathematical ideas • Estimate Reasonably • Use tools or technology to analyze relationships and test conjectures • Model mathematics in contextualized experiences <p>Understanding and Solving</p> <ul style="list-style-type: none"> • Develop, demonstrate, and apply conceptual understanding of mathematics • Visualize to explore and illustrate mathematical concepts and relationships • Apply flexible strategies to solve problems in both abstract and contextualized situations <p>Communicating and Representing</p> <ul style="list-style-type: none"> • Communicate mathematical thinking in many ways • Represent mathematical ideas in a variety of ways • Explain and justify mathematical ideas <p>Connecting and Reflecting</p> <ul style="list-style-type: none"> • Reflect on mathematical thinking • Connect mathematical concepts to each other and to other areas and personal interests
<p>Summative Assessments</p>	<p>What the students will understand:</p> <ul style="list-style-type: none"> • Using inverses is the foundation of solving equations and can be extended to relationships between functions • Understanding the characteristics of families of functions allows us to model and understand relationships and to build connections between classes of functions • Transformations of shapes extend to functions and relations in all of their representations

Content	What the students will know: <ul style="list-style-type: none"> • Logarithmic functions and equations • Exponential functions and equations • Operations on logarithms • Geometric sequences and series • Polynomial functions and equations • Transformations of functions, including radical, absolute value, and reciprocal functions • Rational functions • Trigonometric functions and equations with real numbers • Trigonometric identities
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Grade Boundaries:

An "A" student will/can...

- Demonstrate and apply the curricular competencies
- Analyze the information and synthesize the correct solution
- Discern challenging patterns
- Apply the concepts and extrapolate onto contextualized situations
- Demonstrate superb command of numeracy (no computational error)
- Solve challenging problems in familiar and unfamiliar situations

A "B" student will /can ...

- Sometimes demonstrate and apply the curricular competencies
- Analyze the information and synthesize the solution
- Identify the complex patterns within the context of the problem
- Apply the concepts and understand some details in contextualized situations
- Demonstrate good command of numeracy
- Solve challenging problems in familiar and working towards unfamiliar situations

A "C" student will /can ...

- Demonstrate the curricular competencies
- Organize the information and attempt to interpret the solution
- Identify the patterns within the context of the problem
- Build on learned concepts but is still working on finding details in contextualized situations
- Solve routine two-step problems

Celebration of learning:

The 2019 Celebration of Learning is shaped around “Connections”. Students will be exploring relationships. The big idea of transformations and their applications to any base functions is a key concept in this course. Each class will have a sister class who will connect. Each student will complete a connections card and post it in the school.

Resources:

Pre-Calculus 12 textbook – McGraw Hill
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