Course: Pre-Calculus 11

Teacher Name: Stephanie Maxwell, Florin Pisica

Contact information: smaxwell@sd44.ca, fpisica@sd44.ca

Website information: All course material can be found on MS Teams

Course Description:

The Pre-Calculus 11 course is designed to provide students with the mathematical understanding and critical thinking skill identified for entry to university level mathematics, science, engineering, or other mathematically intensive fields of study.

Topics include:
- **real number** system
- **powers** with rational exponents
- **radical** operations and equations
- polynomial **factoring**
- **rational** expressions and equations
- **quadratic** functions and equations
- linear and quadratic **inequalities**
- **trigonometry:** non-right triangles and angles in standard position
- financial literacy: compound interest, investments, loans

https://curriculum.gov.bc.ca/curriculum/mathematics/11/pre-calculus

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.aspx

Course Syllabus:

Conceptual Understandings	Curricular Competencies	Content	Performance Task or Assessment
Roots and Powers	• Develop, demonstrate, and apply conceptual understanding • Represent mathematical ideas in concrete, pictorial, and symbolic forms • Explain and justify mathematical ideas and decisions in many ways	• real numbers classification • rational exponents & exponent laws • evaluation using order of operations	• MS Teams Forms Quizzes • Summative inquiry/higher understanding assignment/project • One-on-one virtual teacher/student assessments
Radical Operations and Equations	• Visualize to explore and illustrate mathematical concepts and relationships • Develop, demonstrate, and apply conceptual understanding • Explain and justify mathematical ideas and decisions in many ways	• simplifying radicals • ordering a set of irrational numbers • performing operations with radicals • solving simple radical equations algebraically and graphically • identifying domain restrictions and extraneous roots of radical equations	• MS Teams Forms Quizzes • Summative inquiry/higher understanding assignment/project • One-on-one virtual teacher/student assessments
Solving Quadratic Equations	• Develop, demonstrate, and apply conceptual understanding • Reflect on mathematical thinking • Apply flexible and strategic approaches to solve problems	• GCF of a polynomial • factoring trinomials of the form $ax^2 + bx + c$ • difference of squares of the form $a^2x^2 - b^2y^2$ • solving quadratic equations by a variety of methods	• MS Teams Forms Quizzes • Summative inquiry/higher understanding assignment/project • One-on-one virtual teacher/student assessments
Analyzing Quadratic Functions and Inequalities	• Explore, analyze, and apply mathematical ideas using reason, technology, and other tools • Model with mathematics in situational contexts	• identifying characteristics of graphs of quadratic functions • exploring transformations • connecting equation-solving strategies • connecting equations with functions	• MS Teams Forms Quizzes • Summative inquiry/higher understanding assignment/project • One-on-one virtual teacher/student assessments

	• Reflect on mathematical thinking • Use mistakes as opportunities to advance learning	• solving problems in context • sign analysis • symbolic notation for inequality statements, including interval notation	

Trigonometry	• Explore, analyze, and apply mathematical ideas using reason, technology, and other tools
	• Develop, demonstrate, and apply conceptual understanding
	• Model with mathematics in situational contexts
	• Reflect on mathematical thinking
	• Use mathematical vocabulary and language to contribute to discussions in the classroom
		• use of sine and cosine laws to solve non-right triangles
		• contextual and non-contextual problems
		  ○ angles in standard position in degrees
		  ○ special angles, as connected with the 30-60-90 and 45-45-90 triangles
		• unit circle
		• reference and coterminal angles
		• trigonometric ratios
		• simple trigonometric equations
			• MS Teams Forms Quizzes
			• Summative inquiry/higher understanding assignment/project
			• One-on-one virtual teacher/student assessments

Rational Expressions and Equations	• Develop, demonstrate, and apply conceptual understanding • Model with mathematics in situational contexts • Apply flexible and strategic approaches to solve problems	• simplifying and applying operations to rational expressions • identifying non-permissible values • solving equations and identifying any extraneous roots	• MS Teams Forms Quizzes • Summative inquiry/higher understanding assignment/project • One-on-one virtual teacher/student assessments
Financial Literacy	• Explore, analyze, and apply mathematical ideas using reason, technology, and other tools • Apply flexible and strategic approaches to solve problems	• compound interest • introduction to investments/loans with regular payments • buy/lease	• Summative inquiry/higher understanding assignment/project

	• Connect mathematical concepts with each other, with other areas, and with personal interests		

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

Commented [DA1]: This one is confusing me a bit. Isn't the notion of 'applying' inherent in demonstrating a competancy?

Resources
MS Teams and Class Notebook

| Consistent access to a Computer with microphone and camera |
| Pre-Calculus 11 Workbook (purchased on the first day) |
| Students will need a scientific **and** a graphing calculator (TI 83 or 84 is preferred) |