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INTRODUCTION

Welcome to Precalculus 12! This course marks the final step toward secondary and post-secondary calculus classes, namely the two offered at PW: **Calculus 12** and **AP Calculus**. This course will build off the core ideas of precalculus 11 as we extend our understanding of polynomials into higher degrees and begin to analyze functions that were introduced in earlier years such as trig functions and rational functions and some new functions as we explore the exponential and log functions. This course is designed to prepare you into your first analysis work and almost the entire course is devoted to function analysis and manipulation.

BASIC EXPECTATIONS

- Respect everyone's space and wear your mask. While we work in small groups, we still need to be mindful of the interactions between us.
- Build comfort doing math collaboratively. Your skills will develop much faster if you are working with someone else.
- Take risks when offering ideas in class discussions.
- Learn to love making mistakes. Once you understand what not to do or why something is wrong, you are not going to make that mistake again and the mistake will often highlight what you should do instead.
- Phones and other devices are NOT allowed out for any reason other than to use for Desmos/Geogebra. I have a zero-tolerance policy for using distracting devices and you will be asked to leave the classroom if you use it during class time. **This is a One-Strike Policy. You will not be given a warning.**
- My usual policy is that missing a test will result in a mark of 0. Exceptions may be granted only with my prior consent, and with official documentation from your parent or guardian supporting your reason for missing the test. With COVID I need to be notified within 48 hours of the missed test and be emailed/called by a guardian so we can talk about how to make up the test securely. Make-up tests will not be provided, but extra credit may be given if the need/want is there.
- Attend class during flex time. We will meet Monday, Tuesday, Thursday, Friday in person regularly. We may have fewer or more flex time meetings depending on need but this is the expected meeting days.
- Complete work honestly.

MATERIALS

- Students will be issued a copy of *Pre-Calculus 12* by McGraw-Hill Ryerson. Lost or unreturned textbooks are $95
- Coiled/bound notebook to complete practice problems in and to write additional notes.
- Three-ringed binder to hold handouts and notes.
- A good set of highlighters
- A scientific calculator with at least 2-line display. My personal favourite is the Texas Instrument TI-30xiis

ASSESSMENT & EVALUATION
Level of learning will be assessed though a combination of check-ins, quizzes, tests, projects, and assignments. Everything will be marked relative to a rubric for the topic and level of learning.

Formative:
During each class you will have the opportunity to practice "DO" and "UNDERSTAND" level questions and receive feedback from me and your peers. We will have class discussions that let you respond to "KNOW" and "UNDERSTAND" level questions that relates to the current topic.

Summative:
- **KNOW**
  - o **Entrance & Exit Slips:** We will have a very short assessment to start each class. One or two identify/recognize questions that are multiple choice.
  - o *To get at least a B in the class, we need to be averaging above a proficient level with these questions (above 3).*
- **DO**
  - o **Entrance Slips:** On the long days, we will have a question to do something with the content from the previous class. It will be centered around one of the 3 competencies (reasoning (estimation, technology and strategy); solving (accurate calculations); and communicating (accurate graphs and math vocabulary)).
  - o **Assignments:** Work assigned that is to be completed at home with technology (desmos, geogebra, or excel).
  - o **Tests:** A final assessment for each major unit (about 2 chapters) will have a unit test. The first half of the test will be questions that are extensions of the assignment or entrance slips.
  - o *To get an A in the class we need to be averaging above a proficient level with these questions (above 3).*
- **UNDERSTAND**
  - o **Tests:** A final assessment for each major unit (about 2 chapters) will have a unit test. The second half of the test will be questions like the examples provided earlier.
  - o **Projects:** A few projects that will involve modelling a problem using technology and building connections of transformations and inverses.
  - o *To get a high A (>93) in the class we need to be averaging above a proficient level with these questions (above 3). To get at least an A we need to be averaging above a developing level with these questions (above 2).*

Topic	Main Topics	# of Days
Week 1: IN PERSON April 28th – 30th		
Functions **Textbook: Chapter 10 and 1 (10.3 and 1.1-1.2)**	• Review Function Notation and Using Desmos/Geogebra • Function Composition • Translations and Stretches	3
Week 2: FLEX May 3rd – 7th		
Transformations **Textbook: Chapter 1 (1.3-1.4)**	• Reflections and Parity • Combining Transformations • Inverses	4

	Week 3: IN PERSON May 10th – 14th	
Polynomials **Textbook: Chapter 3**	• Characteristics of polynomials (end behaviour and zeros) • Polynomial division • Remainder Theorem and Factor Theorem	5
	TEST: Functions and Transformations May 11th	
	Week 4: FLEX May 17th – 20th	
Rational Functions **Textbook: Chapter 9**	• Characteristics of rationals (zeros and asymptotes) • Modelling and solving rational functions	4
	Week 5: IN PERSON May 25th – 28th	
Trig Functions **Textbook: Chapter 4 (4.1 and 4.3) and Chapter 5 (5.1 and 5.2)**	• The radian as an arc and angle • Unit Circle and Special Triangles • Trig ratios and their inverse • Characteristics and transformations of sinusoidal functions (amplitude, period, shift, midline)	4
	TEST: Polynomials and Rational Functions May 26th	
	Week 6: FLEX May 31st – June 4th	
Trig Functions and Sequence and Series **Textbook: Section 5.4**	• Solving trig equations • Modelling trig functions • Sequences and series notation	4
	Week 7: IN PERSON June 7th – June 11th	
Geometric Sequences and Series and Exponentials **Textbook: Chapter 7 and 8.1**	• Geometric sequence and series • Exponential Functions • Characteristics of exponential functions (asymptote, growth period, growth rate) • Log functions as the inverse	5
	TEST: Trig functions June 8th	
	Week 8: FLEX June 14th – June 18th	
Exponential and Log Functions **Textbook: Chapter 8 (8.3 and 8.4)**	• Log Laws • Modelling exponential functions • Solving exponential equations	4
	Week 9: IN PERSON June 21st – June 25th	
		5
	Project: Modelling the Collector Problem Optional Final Project on Transformations and Inverses	
	TEST: Sequences + Exponential functions June 22nd	