**Pre-Calculus Math 12**

**Course Outline**

Mr. J. Collins

jcollins@sd38.bc.ca

mrjcollins.weebly.com

Unit #1 – Transformations of Functions

* Horizontal and vertical translations
* Reflections
* Stretches about the x or y axis
* Combining transformations

Unit #2 - Exponential and Logarithmic Functions

* Review of exponents
* Solving exponential equations with a common base
* Exponential functions
* Logarithmic functions
* Evaluating logarithms
* Laws of logarithms
* Combining the laws of logarithms
* Graphing exponential and logarithmic functions

Unit #3 – Applications of Exponential and Logarithmic Functions

* Solving exponential equations
* Applications in finance
* Applications of exponential growth and decay
* Solving logarithmic equations
* Logarithmic scales and applications

Unit #4 – Trigonometric Functions and Graphs

* Angular measure in degrees
* Angular measure in radians
* Trigonometric ratios
* Determining angle measure from a trigonometric ratio
* Special triangles, exact values and the unit circle
* Graphing primary trigonometric functions
* Transformations of trigonometric functions
* Sinusoidal functions
* Modeling sinusoidal functions

Unit #5 – Trigonometric Equations and Identities

* Solving first degree trigonometric equations
* Solving second degree trigonometric equations
* Solving equations involving multiple angles
* Trigonometric identities
* Sum and difference identities
* Double angle identities
* Using identities to solve equations

Unit #6 – Polynomial Functions and Equations

* Polynomial functions
* Using long division to divide by a binomial
* Using synthetic division to divide by a binomial
* The remainder theorem and the factor theorem
* Factoring polynomial expressions
* Investigating the graphs of various polynomial functions
* Polynomial functions with a leading coefficient other than +/- 1

Unit #7 - Functions and Relations

* Functions review
* Operations with functions
* Composition of functions
* Inverse of a function

Unit #8 – Analyzing Radical and Rational Functions

* Radical functions
* Rational functions – asymptotes
* Rational functions – points of discontinuity
* Graphs of rational functions
* Solving radical and rational equations

Unit #9 – Geometric Sequences and Series

* Common ratio, first term, general term
* Geometric sequences connecting to exponential functions
* Infinite geometric series
* Sigma notation

**Assessment**

Your grade for the class will be determined using the following breakdown:

Problem Sets 10%

Mid Year Exam 15%

Unit Tests and Quizzes 60%

Year End Exam 15%

Grades reported on all report cards will be cumulative for the entire year to date.

**Equipment**

You will be required to bring each of the following to class *every day*:

* Notebook with lined paper and textbook (AVP Pre--Calculus 12 Workbook)
* Pen, pencil, eraser, ruler
* Graphing calculator

## Expectations

1. Students are expected to attend class regularly, be on time, and have all necessary equipment. Regular attendance is the most critical component to success. Too many absences, even for the best of reasons, can make it difficult, if not impossible for a student to adequately complete the required course outcomes.
2. ALL work missed because of EXCUSED absences must be completed. It is the responsibility of the student to determine what work was missed and to complete it by a mutually agreed date.
3. All students are expected to participate in and be attentive during class. Therefore, no electronic devices of any kind should be on, used, worn, or visible during class time. I may allow music devices only (no games, movies, texting, internet, etc) to be used during seatwork time.
4. All homework and assignments are to be completed for the next class (unless otherwise stated).

**Missed Tests**

Ample notice will be given before any tests. Students who miss writing a test will be expected to bring a note (from their doctor in the case of illness) explaining their absence and write the test as soon as possible. Once marked tests have been returned to the class, missed tests will receive a score of zero.

Students cheating on exams will receive zero on the exam and will have their parents or guardians contacted.