



# CARSON GRAHAM SECONDARY SCHOOL

2145 Jones Avenue North Vancouver BC V7M 2W7 Ph. 604-903-3555 Fax 604-903-3556



## COURSE OUTLINE: Pre-Calculus 12, Year 2014-2015

### **Teacher:**

Mr. Amory KC Wong

[amorywong@sd44.ca](mailto:amorywong@sd44.ca)

<https://amorykcwong.ca>

### **Course Description:**

This course is designed to provide students with the mathematical understanding and critical thinking skills identified for entry into post-secondary programs that require the study of theoretical calculus. Topics include: polynomials, rational functions, composition of functions, exponentials, logarithms, trigonometric functions, relations and functions, permutations, combinations and binomial theorem.

### **Objectives:**

- Develop trigonometric reasoning.
- Develop algebraic and graphical reasoning through the study of relations.
- Develop algebraic and numeric reasoning that involves combinatorics.

At the end of the course the student should be able to:

- Demonstrate an understanding of angles in standard position, expressed in degrees and radians.
- Develop and apply the equation of the unit circle.
- Solve problems, using the six trigonometric ratios for angles expressed in radians and degrees.
- Graph and analyze the trigonometric functions sine, cosine and tangent to solve problems.
- Solve, algebraically and graphically, first and second degree trigonometric equations with the domain expressed in degrees and radians.
- Prove trigonometric identities
- Demonstrate an understanding of operations on, and compositions of, functions.
- Demonstrate an understanding of the effects of horizontal and vertical translations and stretches on the graphs of functions and their related equations.
- Apply translations and stretches to the graphs and equations of functions.
- Demonstrate an understanding of the effects of reflections on the graphs of functions and their related equations, including reflections.
- Demonstrate an understanding of inverses of relations.
- Demonstrate an understanding of logarithms.
- Demonstrate an understanding of the product, quotient and power laws of logarithms.
- Solve problems that involve exponential and logarithmic equations.
- Demonstrate an understanding of factoring polynomials of degree greater than 2
- Graph and analyze polynomial, radical, and rational functions.



# CARSON GRAHAM SECONDARY SCHOOL

2145 Jones Avenue North Vancouver BC V7M 2W7 Ph. 604-903-3555 Fax 604-903-3556

---



- Apply the fundamental counting principle to solve problems.
- Determine the number of permutations and combinations of  $n$  elements taken  $r$  at a time to solve problems.
- Expand powers of a binomial in a variety of ways, including using the binomial theorem

## **Course Content for Term 1:**

- Chapter 1 – Polynomial Expressions and Functions
- Chapter 2 – Radical and Rational Functions
- Chapter 3 – Transforming Graphs of Functions

## **Course Content for Term 2:**

- Chapter 4 – Combining Functions
- Chapter 5 – Exponential and Logarithmic Functions
- Chapter 6 - Trigonometry

## **Course Content for Term 3:**

- Chapter 7 – Trigonometric Equations and Identities
- Chapter 8 – Permutations and Combinations
- New Curriculum - Conics (time permitted)

## **General Assessment:**

- Assessment will be based on chapter tests (60%) and homework (20%).
- The final exam will be worth 20%.
- Marks will be computed on a cumulative percentage basis.
- Students may earn bonus marks through extra work (conditions apply – see website)
- Students may re-write tests (conditions apply – see website)

## **Classroom resources:**

- G. Davis, et al. Pre-Calculus 12. Pearson, 2012. (1<sup>st</sup> choice)

## **Resource Materials to be supplied by students:**

- Ring binder with ample supply of paper
- Pencils, erasers, ruler, colored markers
- Graphing calculator (TI-83/84 Plus or Casio fx-9750/9860 recommended)
- Basic scientific calculator (TI-30XS or Casio fx-300ES Plus recommended)