



Sir John A. Macdonald Secondary School Mathematics Department

# Grade 12 University Advanced Functions

---

## Course Description

Students will investigate the properties of polynomial, rational, logarithmic and trigonometric functions; develop techniques for combining functions; broaden their understanding of rates of change; and develop facility in applying these concepts and skills. **This course is a prerequisite for the Calculus and Vectors course (MCV4UI).**

## Course Units

Unit	Description (weight 70%)
1	Number Systems
2	Polynomial Functions I
3	Polynomial Functions II
4	Exponential and Logarithmic Functions and Equations
5	Rational Functions
6	Trigonometry I
7	Trigonometry II
8	Combinations of Functions
9	Rates of Change
	<b>Exam (30%)</b> A comprehensive exam that covers all the course content.

## Essential Course Components

To be successful in this course you **must** be able to demonstrate **all** of the following skills.

- identify and describe key features of polynomial functions, and make connections between the numeric, graphical, and algebraic representations of polynomial functions
- solve problems involving polynomial and simple rational equations graphically and algebraically; demonstrate an understanding of solving polynomial and rational inequalities
- demonstrate an understanding of the relationship between exponential/logarithmic expressions, apply the laws of logarithms to simplify/evaluate numeric expressions; identify and describe key features of the graphs of logarithmic functions; solve exponential and simple logarithmic equations in one variable algebraically
- identify and describe key features of the graphs of rational functions, and represent rational functions graphically
- demonstrate an understanding of the meaning and application of radian measure; solve real-world applications and develop mathematical models
- make connections between trigonometric ratios and the graphical and algebraic representations of the corresponding functions; make connections between trigonometric functions and their reciprocals to solve problems
- solve problems involving trigonometric equations and prove trigonometric identities
- determine functions that result from the addition, subtraction, multiplication, division, and composition of two functions.
- demonstrate the ability to understand, determine, and interpret average and instantaneous rates of change from a numerical and graphical perspective

## Procedures

Key values of Sir John A. Macdonald Secondary School and the WRDSB include respect, responsibility, honesty, and trustworthiness. Our expectations for student behaviour and academic conduct come from these core values. In accordance with **Waterloo Region District School Board** guidelines outlined in the **Assessment, Evaluation, and Reporting Handbook**, the following policies are in effect at SJAM:

### a) Late and Missed Assignments

*Completing tasks on time has been shown to be a key part of school success. It is the expectation that students will submit all required work by the assigned deadlines.*

- If work is not submitted on time, next steps will involve student-teacher conferences, parent/guardian contact and may include student referral to in-school supports.
- The teacher will determine a date after which he/she will no longer accept an assignment for marks. In the absence of these student products, teachers will use professional judgement to determine a grade based on evidence of learning available/seen to that point.
- If one or more assignments are not completed, students risk losing the credit for the course.
- The Learning Skills section of the student's Provincial Report Card will be used to reflect incidents of late and missed assignments.

### b) Cheating and Plagiarism

*It is the expectation that students will submit their own, original work for the purpose of demonstrating their learning. Note that plagiarism includes both sharing original work and using work that is not one's own. In the event that cheating or plagiarism occurs, the following consequences may be implemented, in consultation with administration, depending on the situation:*

- The student who plagiarizes will be required to complete the *SJAM Academic Honesty Remediation Tutorial*.
- The student may be required to redo all or part of the assignment or assessment.
- The student may be required to complete an alternate assignment or assessment.
- Consequences may include a loss of access to academic awards and scholarship opportunities.
- Plagiarism will be reflected in the Learning Skills section of the student's Provincial Report Card.
- Potential disciplinary actions may also include suspension.

### a) Waterloo Region District School Board Policy for Provincial Report Card marks below 50%

*If a student does not earn the credit for the course, the student's mark will be reported as follows:*

- a mark in the range of 35-45% only.
- or
- a mark of 0 will be assigned if a student has demonstrated NO evidence of achievement.

## Teacher Contact Information

The teacher for this course is Mr. Taylor. He can be reached at (519) 880 - 9979 or [jim\\_h\\_taylor@wrdsb.on.ca](mailto:jim_h_taylor@wrdsb.on.ca) I am always available for extra help. Book a time or find me in the Math Office or the classroom. For course notes, handouts and other class information visit <http://mrjtaylor.weebly.com/>.

### • Materials

Bring your textbook and notebook, with lined and graph paper, a pencil, ruler and scientific calculator to class daily.

Mathematics Contest Information		
	Date Written	Registration Deadline
Euclid	April 6, 2016	March 21, 2017
Canadian Senior Math Contest	November 23, 2016	November 4, 2016
Canadian Computing Competition	February 22, 2017	February 8, 2017