JOHN ABBOTT CEGEP/COLLEGE

Algebra and Trigonometry

PATHWAYS
COURSE OUTLINE
WINTER 2025

General Information.

Discipline: Mathematics *Course code*: 201-015-RE
Ponderation: 4-2-4 *Credits*: $3\,1/3$
Number of class hours: 90
Prerequisite:
Sec. IV Math (Technical & Scientific *or* Science Option)
or 201-016-05 (in college)
Objective:
01PR: Solve problems by using concepts in algebra and geometry.

Your teacher will provide you with contact information, a listing of office hours, and the breakdown of the class mark in your section
(see the written supplement to this course outline).

Introduction. This course is designed for students who need to review or relearn the basic skills in algebra and trigonometry. Successful completion of this course will allow you to take Calculus I and other college level mathematics courses.

Objectives. The successful student should be able to acquire a basic vocabulary in mathematics, develop basic skills in manipulating and simplifying algebraic expressions, acquire expertise in solving polynomial equations, linear inequalities, equations involving rational expressions, equations with one radical, and exponential and log equations, and also graph basic linear, quadratic, absolute value, exponential, logarithmic and trig functions, use Pythagoras's Theorem, the trig ratios, Law of Sines and Law of Cosines, prove simple trig identities, and prepare for other math courses at the college level.

Textbook. Your teacher may require *Introduction to Elementary Functions*, by Sergio Fratarcangeli. Available at the college bookstore for about $19.

Course Costs. In addition to the cost of the text, a scientific calculator (about $25) is necessary. Only calculators which have previously been inspected and approved via sticker by the instructor will be permitted for use on quizzes, tests or the final examination. The only calculators that will be approved begin with the model number **SHARP EL-531**. An acceptable calculator model is available for purchase at the bookstore.

Bibliography. *Algebra and Trigonometry*, by Carosiello, Gideon and Gatien, is a good source of additional exercises. *Precalculus*, by Faires and DeFranza, is also a useful reference.

Teaching Methods. Classes are primarily lectures with some discussion and problem-solving. Homework normally amounts to about four hours a week. Many of the failures in this course are due to missing classes. You are expected to attend all lectures, to read the textbook, and to do the homework. Work is required! If something is unclear, ask your teacher before class, or after class, by e-mail or whatever.

Evaluation Plan. The Final Grade is a combination of the Class Mark and the mark on the Final Exam. The Class Mark will include the student's results from three or more in-class written tests (worth at least 75% of the Class Mark), and possibly homework, quizzes and other assignments. The specifics of the Class Mark will be given by your instructor during the first week of classes in an appendix to this outline. The Final Evaluation in this course consists of the Final Exam, which covers all elements of the competency. The Final Grade is a combination of the Class Mark and the mark on the Final Exam. The method of determining the Class Mark will be given by your teacher on the first day of classes (see the supplement to this course outline). The Final Exam is set by the course committee, which consists of all instructors currently teaching this course, and is marked by each individual instructor.

The Final Grade will be the better of:

50% Class Mark and 50% Final Exam Mark

or

25% Class Mark and 75% Final Exam Mark

A student *choosing not to write* the Final Exam will receive a failing grade of 50% or their Class Mark, whichever is less.

Students must be available until the end of the final examination period to write exams.

Note that in the event of unexpected changes to the academic calendar, the evaluation plan may be modified.

Other Resources.

Math Website.
http://departments.johnabbott.qc.ca/departments/mathematics

Math Study Area. Located in H-200A and H-200B; the common area is usually open from 8:30 to 17:30 on weekdays as a quiet study space. Computers and printers are available for math-related assignments. It is also possible to borrow course materials when the attendant is present.

Math Help Centre. Located in H-216; teachers are on duty from 8:30 until 15:30 to give math help on a drop-in basis.

Peer Tutoring. Starting on the fifth week of each semester, first year students can be paired with a fellow finishing student for a weekly appointment of tutoring. Ask your teacher for details.

Academic Success Centre. The Academic Success Centre, located in H-139, offers study skills workshops and individual tutoring.

Course Content. List of Suggested Exercises from *Introduction to Elementary Functions*.

Functions
1.3 #1-2
1.4 #1-2
1.5 #1-5

Linear Functions
2.2 #1-2
2.3 #3
2.4 #1-5
2.5 #1-6

Polynomial Functions
3.1 #1
3.4 #1-2
3.5 #1
3.6 #1-2
3.7 #1
3.8 #1(a)-(g), 2-5
3.9 #1-2
3.10 #1
3.12 #1

Rational Functions
4.2 #1-3
4.3 #1-3
4.4 #1-3
4.5 #1-2
4.6 #1

Algebraic Functions
5.3 #1-3
5.7 #1
5.8 #1
5.9 #1(a)-(l)

Exp and Log Functions
6.1 #1-3
6.2 #1-4
6.4 #1-4
6.5 #3-4
6.6 #1-3
6.7 #1-3
6.8 #1
6.9 #1-3
6.10 #1-2

Trig Functions
7.1 #1-3
7.2 #1-11
7.3 #1, 3
7.4 #2-3
7.5 #1-2
7.6 #1, 3-5
7.7 #1-2
7.9 #1-3
7.10 #1

Supplements will also be provided by the instructor for vectors and similar figures.

College Policies.

Policy No. 7 - IPESA, Institutional Policy on the Evaluation of Student Achievement: https://www.johnabbott.qc.ca/wp-content/uploads/2021/05/Policy-No.-7-IPESA-FINAL.pdf.

Religious Holidays (Article 3.2.13 and 4.1.6). Students who wish to miss classes in order to observe religious holidays must inform their teacher of their intent in writing within the first two weeks of the semester.

Student Rights and Responsibilities: (Article 3.2.18). It is the responsibility of students to keep all assessed material returned to them and/or all digital work submitted to the teacher in the event of a grade review. (The deadline for a Grade Review is 4 weeks after the start of the next regular semester.)

Student Rights and Responsibilities: (Article 3.3.6). Students have the right to receive graded evaluations, for regular day division courses, within two weeks after the due date or exam/test date, except in extenuating circumstances. A maximum of three (3) weeks may apply in certain circumstances (ex. major essays) if approved by the department and stated on the course outline. For evaluations at the end of the semester/course, the results must be given to the student by the grade submission deadline (see current Academic Calendar). For intensive courses (i.e.: intersession, abridged courses) and AEC courses, timely feedback must be adjusted accordingly.

Academic Procedure: Academic Integrity, Cheating and Plagiarism (Article 9.1 and 9.2). Cheating and plagiarism are unacceptable at John Abbott College. They represent infractions against academic integrity. Students are expected to conduct themselves accordingly and must be responsible for all of their actions.

College definition of Cheating: Cheating means any dishonest or deceptive practice relative to examinations, tests, quizzes, lab assignments, research papers or other forms of evaluation tasks. Cheating includes, but is not restricted to, making use of or being in possession of unauthorized material or devices and/or obtaining or providing unauthorized assistance in writing examinations, papers or any other evaluation task and submitting the same work in more than one course without the teacher's permission. It is incumbent upon the department through the teacher to ensure students are forewarned about unauthorized material, devices or practices that are not permitted.

College definition of Plagiarism: Plagiarism is a form of cheating. It includes copying or paraphrasing (expressing the ideas of someone else in one's own words), of another person's work or the use of another person's work or ideas without acknowledgement of its source. Plagiarism can be from any source including books, magazines, electronic or photographic media or another student's paper or work.

OBJECTIVES	STANDARDS
Statement of the Competency 01PR: Solve problems by using concepts in algebra and geometry.	
Elements of the Competency	**Performance Criteria**
1. *Analyse situations by using real functions.*	1.1 Appropriate modelling of the situation 1.2 Correct determination of the properties (e.g. domain, $x-$ and $y-$intercepts) and the inverse of an exponential or a logarithmic function, or a second-degree polynomial, square-root, sinusoidal, tangent, rational or piecewise function 1.3 Appropriate use of the additive and multiplicative parameters 1.4 Algebraic manipulation according to the rules (including polynomial division and the composition of functions) 1.5 Accurate interpretation of results
2. *Solve problems by using equations and inequalities.*	2.1 Appropriate modelling of the problem 2.2 Correct application of the methods for solving equations and inequalities in one variable (second-degree, square-root, rational, exponential, logarithmic, trigonometric) 2.3 Correct application of the methods for solving systems of equations involving various functional models 2.4 Accurate interpretation of results
3. *Solve problems involving equivalent figures.*	3.1 Appropriate modelling of the problem 3.2 Appropriate use of the properties of similar figures (length, area, volume) 3.3 Accurate interpretation of the results
4. *Solve problems by using geometric vectors.*	4.1 Appropriate modelling of the problem 4.2 Appropriate use of vectors (addition, multiplication by a scalar, scalar product) 4.3 Accurate interpretation of results
5. *Solve problems by using circles and trigonometry.*	5.1 Appropriate modelling of the problem 5.2 Appropriate construction of a standard unit circle and location of its significant points 5.3 Appropriate application of the laws of sines and cosines 5.4 Appropriate manipulation of trigonometric identities 5.5 Appropriate use of metric relations in circles (e.g. degree, radian, chord, arc, circular sector and segment, inscribed angle) 5.6 Accurate interpretation of results