



CARDINAL LEGER CATHOLIC SECONDARY SCHOOL

75 Mary Street
 Brampton, Ontario L6W 3K5
 905-453-2232

We believe that each one, created in the image and likeness of God, is called by name into the Dufferin-Peel community to realize the Ontario Catholic School Graduate Expectations to the fullest extent possible as we all journey from the early years to vocation.

COURSE OUTLINE

Department:	Mathematics
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Course:	Grade 12 Advanced Functions Mathematics
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Course Code:	MHF4U1
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Common Course Calendar	Course Description:
	<p>This course extends students' experience with functions. 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. Students will also refine their use of the mathematical processes necessary for success in senior mathematics. This course is intended both for students taking the Calculus and Vectors course as a prerequisite for a university program and for those wishing to consolidate their understanding of mathematics before proceeding to any one of a variety of university programs.</p> <p>This course will help students address the Ontario Catholic School Graduate Expectation that they adopt a holistic approach to life by integrating learning from various subject areas and experience.</p>

Ministry/ICE Curriculum Documents	Strand/Unit Title	Corresponding Catholic Graduate Expectation Indicators for each Strand/Unit
	<p>EXPONENTIAL AND LOGARITHMIC FUNCTIONS By the end of this course, students will:</p> <ol style="list-style-type: none"> 1. demonstrate an understanding of the relationship between exponential expressions and logarithmic expressions, evaluate logarithms, and apply the laws of logarithms to simplify numeric expressions; 2. identify and describe some key features of the graphs of logarithmic functions, make connections among the numeric, graphical, and algebraic representations of logarithmic functions, and solve related problems graphically; 3. solve exponential and simple logarithmic equations in one variable algebraically, including those in problems arising from real-world applications. 	<p>- Thinks critically about the meaning and purpose of work.</p>

	<p>TRIGONOMETRIC FUNCTIONS By the end of this course, students will:</p> <ol style="list-style-type: none"> 1. demonstrate an understanding of the meaning and application of radian measure; 2. make connections between trigonometric ratios and the graphical and algebraic representations of the corresponding trigonometric functions and between trigonometric functions and their reciprocals, and use these connections to solve problems; 3. solve problems involving trigonometric equations and prove trigonometric identities <p>POLYNOMIAL AND RATIONAL FUNCTIONS By the end of this course, students will:</p> <ol style="list-style-type: none"> 1. identify and describe some key features of polynomial functions, and make connections between the numeric, graphical, and algebraic representations of polynomial functions; 2. identify and describe some key features of the graphs of rational functions, and represent rational functions graphically; 3. solve problems involving polynomial and simple rational equations graphically and algebraically; 4. demonstrate an understanding of solving polynomial and simple rational inequalities. <p>CHARACTERISTICS OF FUNCTIONS By the end of this course, students will:</p> <ol style="list-style-type: none"> 1. demonstrate an understanding of average and instantaneous rate of change, and determine, numerically and graphically, and interpret the average rate of change of a function over a given interval and the instantaneous rate of change of a function at a given point; 2. determine functions that result from the addition, subtraction, multiplication, and division of two functions and from the composition of two functions, describe some properties of the resulting functions, and solve related problems; 3. compare the characteristics of functions, and solve problems by modelling and reasoning with functions, including problems with solutions that are not accessible by standard algebraic techniques 	<p>- Integrates learning from various subject areas and experiences</p> <p>- Applies effective communication, decision-making, problem-solving, time and resource management skills.</p> <p>- thinks reflectively and creatively to evaluate situations and solve problems</p>
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Assessment and Evaluation:

Category Weightings	Weight %
Knowledge/Understanding	30
Thinking	20
Application	30
Communication	20

Assessments	% of Grade
Term Work	70%
Final Exam	30%

Learning Skills and Work Habits

E= Excellent G=Good S=Satisfactory N= Needs Improvement

Responsibility	<ul style="list-style-type: none"> • Fulfills responsibility and commitments. • Takes responsibility for and manages own behavior.
Organization	<ul style="list-style-type: none"> • Devises and follows a plan and process for completing tasks. • Establishes priorities and manages time
Independent Work	<ul style="list-style-type: none"> • Independently monitors, assesses, and revises plans to complete tasks and meet goals. • Uses class time to complete tasks.
Collaboration	<ul style="list-style-type: none"> • Accepts various roles and an equitable share of work in a group. • Builds healthy peer-to-peer relationships.
Initiative	<ul style="list-style-type: none"> • Looks for and acts on new ideas and opportunities. • Approaches new tasks with a positive attitude.
Self-Regulation	<ul style="list-style-type: none"> • Sets own goals and monitors progress towards achieving them. • Seeks clarification or assistance when needed.