St. Mother Teresa Catholic High School
Grade 11 Functions MCR3U
2019 - 2020

Teacher: Mrs. M. McNeil, Mrs. R. Major

Prerequisite Course: Principles of Mathematics Grade 10, Academic

Description and Overall Expectations: This course introduces the mathematical concept of the function by extending students' experiences with linear and quadratic relations. Students will represent functions numerically, algebraically, and graphically; solve problems involving applications of functions; investigate inverse functions; and develop facility in determining equivalent algebraic expressions. Students will reason mathematically and communicate their thinking as they solve multi-step problems.

Math Processes: The mathematical processes will be integrated into student learning throughout the course and include: problem-solving, reasoning and proving, reflecting, selecting tools and computational strategies, connecting, representing, and communicating.

Characteristics of Functions: demonstrate an understanding of functions, their representations, and their inverses, and make connections between the algebraic and graphical representations of functions using transformations; determine the zeros and the maximum or minimum of a quadratic function, and solve problems involving quadratic functions, including problems arising from real-world applications; demonstrate an understanding of equivalence as it relates to simplifying polynomial, radical, and rational expressions.

Exponential Functions: evaluate powers with rational exponents, simplify expressions containing exponents, and describe properties of exponential functions represented in a variety of ways; make connections between the numeric, graphical, and algebraic representations of exponential functions; identify and represent exponential functions, & solve problems involving exponential functions, including problems arising from real-world applications.

Discrete Functions: demonstrate an understanding of recursive sequences, represent them in a variety of ways, and make connections to Pascal's triangle; demonstrate an understanding of the relationships involved in arithmetic and geometric sequences and series and solve related problems; make connections between sequences, series, and financial applications, and solve problems involving compound interest and ordinary annuities.

Trigonometric Functions: determine the values of the trigonometric ratios for angles less than 360°; prove simple trigonometric identities; and solve problems using the primary trigonometric ratios, the sine law, and the cosine law; demonstrate an understanding of periodic relationships and sinusoidal functions, and make connections between the numeric, graphical, and algebraic representations of sinusoidal functions; identify and represent sinusoidal functions, and solve problems involving them, including problems arising from real-world applications.

Course Resources: Functions 11, Nelson ebook

Required Materials to meet with success in this course:
Students should bring loose-leaf paper in a dedicated math binder, pencils, eraser, blue and red pen, ruler.
The TI-Nspire CAS APP for iPad or the TI-Nspire handheld is strongly recommended, however any scientific calculator is also appropriate.

Catholic Graduate Expectations: Our goal for all students is to experience an education based on our Catholic Graduate Expectations. We work in community to develop graduates that are:
- Discerning Believers Formed in the Catholic Faith Community
- Effective Communicators
- Reflective and Creative Thinkers
- Self-Directed, Responsible, Life-Long Learners
- Collaborative Contributors
- Caring Family Members

Responsible Citizens   http://www.iceont.ca

Assessment, Evaluation and Reporting: The primary purpose of assessment and evaluation is to improve student learning. Students will understand what is expected of them, using learning goals, and success criteria, based on the overall expectations. Feedback (self, peer, teacher) supports learning, and plays a critical role in academic achievement and success.

The development of learning skills and work habits is a key indicator of future success. The following learning skills and work habits will be developed, assessed, and reported during this course:

1. Responsibility   fulfills responsibilities and commitments *(e.g. accepts and acts on feedback)*
2. Organization   manages time to complete tasks and achieve goals *(e.g. meets goals, on time)*
3. Independent work   uses class time appropriately to complete tasks *(e.g. monitors own learning)*
4. Collaboration   works with others, promotes critical thinking *(e.g. provides feedback to peers)*
5. Initiative   demonstrates curiosity and an interest in learning *(e.g. sets high goals)*
6. Self-Regulation   sets goals, monitors progress towards achieving goals *(e.g. sets, reflects goals)*

Group work supports collaboration, an important 21st century skill. This will be assessed only as a learning skill. Homework may also be assessed as a learning skill. Evaluation completed in class will be based only on individual student work. Regular attendance is important to support group work, various forms of feedback, and to allow students to demonstrate evidence of their learning. Students are responsible for providing evidence of their own learning (with references where required), in class, within given timelines. Next steps in response to academic integrity issues, such as lack of work completion, plagiarism, or other forms of cheating, range from providing alternate opportunities, to a deduction of marks.

The achievement chart identifies four levels, based on achievement of the overall expectations:

Level 1   achievement falls below the provincial standard   (50-59%)
Level 2   achievement approaches the provincial standard   (60-69%)
Level 3   achievement is at the provincial standard   (70-79%)
Level 4   achievement surpasses the provincial standard   (80-100%)

The report card grade will be based on evidence of student performance, including observations, conversations and student products. Consideration will be given to more recent evidence (skill development) and the most consistent level of achievement.

Mark Breakdown:

Term Work (70%) will include a variety of assessments designed to demonstrate students' development in their knowledge and understanding, thinking and inquiry, communication and application, of all overall expectations.

Summative evaluation (30%) provides the final opportunity for students to demonstrate what they know, and the skills they have learned, based on the overall expectations. In Functions 3U Math, the summative evaluation will consist of a final exam (20%) and a Culminating Task (10%).

Awarding of Course Credit: Students who demonstrate evidence of achievement of overall expectations, *and* earn a mark of 50% or greater, will earn one credit for the course with the following exception:

Students who do not complete their summative evaluation (exam) will not earn their credit regardless of their mark.

Student and Parent/Guardian Acknowledgement

We have read the above course outline and are aware of the student responsibilities to attend class on a regular basis and to provide evidence of learning within the established timelines.

Student's Name (print): _____   Student's Signature: _____

Parent/Guardian Name (print):_____   Parent/Guardian Signature: _____