

MATHEMATICS

The New York State requirement for graduation is a minimum of three math credits. However, all students are encouraged to take four years of math. The department offers a four - year program ranging from Algebra to Advanced Placement Calculus. All of the concepts in the mathematics curriculum combine the use of various forms of technology with standard analytical techniques. Students entering MHS are required to earn a passing grade on one of the Regents exams in order to obtain a diploma for graduation.

Our courses are organized by conceptual category; Number and Quantity, Algebra, Functions, Geometry, Modeling and Probability and Statistics. The Standards of Mathematical Practice apply throughout each course and, together with the content standards, prescribe that students experience mathematics as a coherent, useful, and logical subject that makes use of their ability to make sense of problem situations. The mathematics curriculum at MHS is designed to develop accurate, efficient, and flexible problem solvers by providing authentic and rigorous problem solving opportunities.

ALGEBRA 1

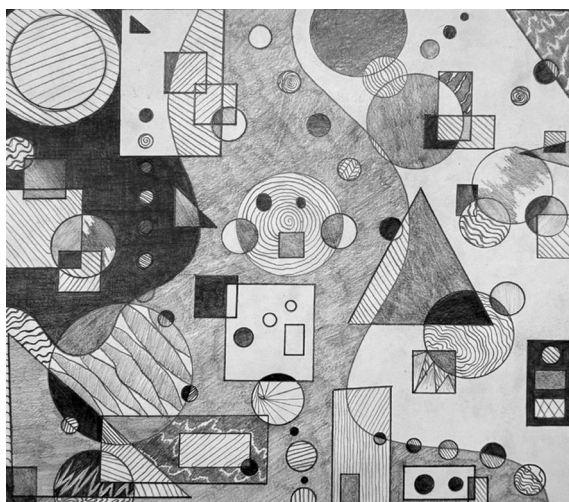
FULL YEAR – 1 CREDIT

In this course, students will follow the New York State learning standards for Algebra 1. The course content includes the study of algebraic expressions; linear equations and inequalities in one and two variables; solving systems of equations graphically and analytically; piecewise and absolute value functions; polynomials and polynomial arithmetic; modeling with polynomial and exponential functions; and presenting and interpreting categorical and quantitative data. This course culminates in a New York State Regents Examination.

TOPICS IN GEOMETRY

FULL YEAR – 1 CREDIT

This course is designed for students who need reinforcement in the analytical processes and algebraic manipulations involved in the study of geometry. Students in this course will apply and adapt a variety of strategies and algorithms to solve problems. The course content includes the study of geometric relationships through constructions; properties of parallel lines, triangles, and polygons; rigid motions and congruence theorems; right triangle trigonometry; coordinate geometry; area and volume; and circle theorems.



Mariami Lukhava



Zoe Piazza

GEOMETRY

FULL YEAR – 1 CREDIT

In this course, students will follow the New York State learning standards for Geometry. The course content includes the study of geometric relationships through constructions; triangle congruence theorems and rigid motions; transformations on the plane and the coordinate plane; ratios and proportions; similarity; right triangle trigonometry; coordinate geometry; polygon and circle theorems; area and volume; and geometric modeling. This course culminates in a New York State Regents Examination.

GEOMETRY HONORS

FULL YEAR – 1 CREDIT

In this course, students will follow the New York State learning standards for Geometry, including the Geometry Plus Standards and be enriched by select advanced topics in mathematics. This course emphasizes the study of formal proofs and theoretical aspects and applications of geometry. This course culminates in a New York State Regents Examination.

TOPICS IN ALGEBRA 2

FULL YEAR - 1 CREDIT

PREREQUISITE: SUCCESSFUL COMPLETION OF THE TOPICS IN GEOMETRY OR GEOMETRY COURSES.

This course is designed for students who need reinforcement in the analytical processes and algebraic manipulations involved in the study of advanced algebra. Students in this course will apply and adapt a variety of strategies and algorithms to solve problems. The course content includes the study of both algebraic and graphic expressions, equations, and inequalities, including: linear, quadratic, rational, radical, and systems of; the real and complex number system; functions including: linear, polynomial, absolute value, exponential, compositions and transformations of; polynomial arithmetic; algebraic fractions; the sum, product, and nature of the roots of a quadratic; properties of exponents and logarithms; conics.

ALGEBRA 2

FULL YEAR - 1 CREDIT

PREREQUISITE: SUCCESSFUL COMPLETION OF THE GEOMETRY OR GEOMETRY HONORS COURSES.

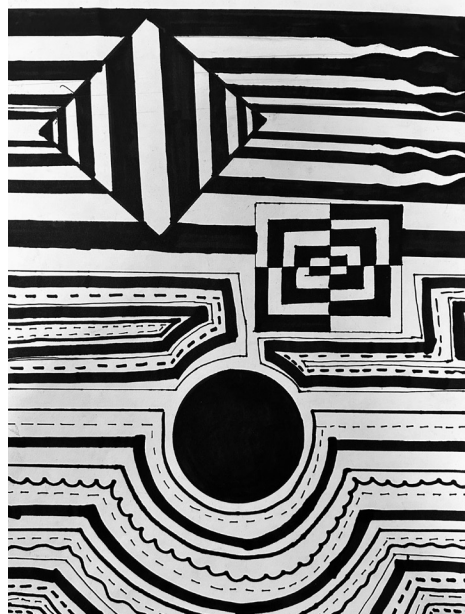
In this course, students will follow a modified New York State Common Core Curriculum for Algebra 2. The course content includes the study of the real and complex number systems; the structure of expressions; arithmetic of polynomial and rational expressions; quadratic equations and inequalities; modeling with polynomial and exponential functions; logarithmic functions and equations; trigonometric functions and identities; the unit circle; and conditional probability.

ALGEBRA 2 HONORS

FULL YEAR - 1 CREDIT

PREREQUISITE: SUCCESSFUL COMPLETION OF THE GEOMETRY HONORS OR GEOMETRY COURSES.

In this course, students will follow a modified New York State Common Core Curriculum for Algebra 2, however, it is enriched by the Algebra 2 Plus Standards and select topics from the Pre-Calculus Curriculum such as the Fundamental Theorem of Algebra and end behavior models. This course emphasizes critical thinking and problem solving skills.



Kenia Godinez Miranda



Juliette Gomez

PRECALCULUS

FULL YEAR - 1 CREDIT

PREREQUISITE: SUCCESSFUL COMPLETION OF THE ALGEBRA 2 OR ALGEBRA 2 HONORS COURSES.

This course is designed for students who are motivated and wish to take AP Calculus AB or prepare themselves for calculus in college. Students in Pre-Calculus will solve problems using a "Rule of Four," which emphasizes graphical, numerical, verbal and analytical methods. The course content includes the study of rational functions, polynomial, absolute value, logarithmic, and exponential functions; the Fundamental Theorem of Algebra; the polar coordinate system; conic sections and their equations; matrices and their applications; statistics and probability; and an introduction to limits and derivatives.

PRE-CALCULUS HONORS

FULL YEAR – 1 CREDIT

PREREQUISITE: SUCCESSFUL COMPLETION AND MASTERY OF THE ALGEBRA 2 HONORS OR ALGEBRA 2* COURSE.

This course is designed for students who are highly motivated and wish to take AP Calculus BC. The course competes Mamaroneck HS curriculum for Pre-Calculus and is enriched by study of sequences and series; polar graphing; proof through mathematical induction; parametric equations; partial fractions; in addition to completing an entire semester of AP Calculus, including a comprehensive study of limits and differentiation. This course emphasizes critical thinking and theoretical approaches to mathematics.



Keiry Alvarez

TOPICS IN COLLEGE MATHEMATICS

FULL YEAR – 1 CREDIT

PREREQUISITE: SUCCESSFUL COMPLETION OF THE TOPICS IN ALGEBRA 2 OR PRECALCULUS COURSE. GRADE: 12

This course includes a variety of topics, each of which has some functionality to serve a real world need or apply to a profession. There are units pulled from college business courses, finance courses, urban management, and even philosophy (as in the case with the logic unit), in addition to a strong focus later on probability and statistics. Upon successful completion of the course, students may have the option to earn college credit through Westchester Community College for an additional fee.



Sophie Steinberg



Eloise REynolds

COLLEGE CALCULUS

FULL YEAR – 1 CREDIT

PREREQUISITE: SUCCESSFUL COMPLETION OF THE PRECALCULUS OR PRE-CALCULUS HONORS COURSE.

This course is designed to serve as an introductory course in single-variable differential and integral calculus. The course will emphasize the use of hands-on activities and real-world applications of calculus. The course content includes the study of limits; derivatives; applications of derivatives; integrals; applications of integrals; the fundamental theorem of calculus; antidifferentiation; and applications of antidifferentiation. Upon successful completion of the course, students may have the option to earn college credit through Westchester Community College for an additional fee.

ADVANCED PLACEMENT CALCULUS AB

FULL YEAR – 1 CREDIT

PREREQUISITE: SUCCESSFUL COMPLETION OF THE
PRECALCULUS OR PRE-CALCULUS HONORS COURSE.

This course covers the curriculum designed by the College Board AP. It is designed to develop mathematical knowledge conceptually, guiding students to connect topics and representations throughout each course and to apply strategies and techniques to accurately solve diverse types of problems. AP Calculus AB is an in-depth study of single-variable differential and integral calculus. Students will solve problems using a “Rule of Four,” which emphasizes graphical, numerical, verbal and analytical methods. The course content includes the study of limits; derivatives; applications of derivatives; integrals; applications of integrals; the fundamental theorem of calculus; antidifferentiation; applications of antidifferentiation; separable differential equations and slope fields. This course requires a commitment to mathematics. Students may earn college credit in addition to course credit upon successful completion of the Advanced Placement examination, which is a requirement of the course.



Lucy Foglia



Isabelle Perez-Criollo

ADVANCED PLACEMENT BC CALCULUS

FULL YEAR – 1 CREDIT

PREREQUISITE: SUCCESSFUL COMPLETION AND MASTERY OF THE
PRE-CALCULUS HONORS OR PRE-CALCULUS* COURSE.

This course covers the curriculum designed by the College Board. It is designed to develop mathematical knowledge conceptually, guiding students to connect topics and representations throughout each course and to apply strategies and techniques to accurately solve diverse types of problems. AP Calculus BC is an in-depth study of single-variable differential and integral calculus. Students will solve problems using a “Rule of Four,” which emphasizes graphical, numerical, verbal and analytical methods. The course content includes the study of limits; derivatives and derivatives of parametric, polar, and vector functions; applications of derivatives; integrals and improper integrals; applications of integrals; the fundamental theorem of calculus; antidifferentiation; applications of antidifferentiation; separable differential equations; polynomial approximations and series. This course requires a serious commitment to mathematics. Students may earn college credit in addition to course credit upon successful completion of the Advanced Placement examination, administered in May, which is a requirement of the course.

AP STATISTICS

Full year – 1 credit

Prerequisite: Successful completion of the Algebra 2 or
Algebra 2 Honors course.

This course covers the curriculum designed by the College Board. The AP Statistics course introduces students to the major concepts and tools for collecting, analyzing, and drawing conclusions from data. There are four themes evident in the content, skills, and assessment in the AP Statistics course: exploring data, sampling and experimentation, probability and simulation, and statistical inference. Students use technology, investigations, problem solving, and writing as they build conceptual understanding. This course requires a serious commitment to mathematics. Students may earn college credit in addition to course credit upon successful completion of the Advanced Placement examination, administered in May, which is a requirement of the course.

*Students wishing to enroll in an Honors or AP-level course from a Regents-level course will be expected to familiarize themselves with topics that were covered in the previous honors course.