

**“The essence of math is not to make simple things complicated, but to make complicated things simple”**

## **CONTACT INFORMATION**

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**Tutoring:** Tues/Thurs (3-4pm in Barnard 350)

## **COURSE OVERVIEW**

This Honors class will be an intense study of Algebra II, Trigonometry, and Pre-Calculus. The first semester will include a review of linear and quadratic functions. During the second semester we will study trigonometric functions and conic sections.

Throughout all topics, there will be an emphasis on representing functions numerically (using tables), algebraically, graphically, and verbally. We will strive to develop a broad and deep understanding of the nature of Algebra, Trigonometry, and Pre-Calculus by investigating how it works and why it works as well as using it in real world applications. As always, students are expected to actively work, to be involved, and to ask questions.

As members of an Honors course, students should expect the class to move at a fast pace. Students will be required to do extra homework and work independently on projects. Working in study groups will benefit students greatly in balancing the homework load as well as increasing understanding of the material.

## **TOPIC OVERVIEW**

### First Semester

Unit 1	Lines and Relations
Unit 2	Pre-Calculus Concepts: Applications of Slope
Unit 3	Nature of Graphs, Transformations
Unit 4	Exponential & Logarithmic Functions
Unit 5	Polynomial & Rational Functions

### Second Semester

Unit 6	Trigonometric Functions
Unit 7	Graphs of Trigonometric Functions
Unit 8	Trigonometric Identities and Proofs

## **GRADING POLICY (PER QUARTER)**

- 40% Tests
- 25% Quizzes, Projects
- 15% Homework
- 20% Classwork (Do Now's, binder checks, participation)

## **YEARLY GRADE BREAKDOWN**

Q1	Q2	Mid-term	Q3	Q4	Final
20%	20%	7%	20%	20%	13%

## **MATERIALS/SUPPLIES**

- *Advanced Mathematical Concepts: Precalculus with Applications*. New York: Glencoe, 2004.
- Binder with loose leaf paper OR  
Math folder plus a 5 subject notebook, spiral bound with perforated edges for math only
- Pencils
- At least a TI-83 graphing calculator

You are expected to bring all your materials to class every day. Failure to do so will result in demerits.

## **HOMEWORK POLICY:**

No late homework will be accepted. If a student is absent, he/she must turn in the homework the day he/she returns to school or within one day of returning and will receive full credit. The 11<sup>th</sup> Grade Absence and Late Submission Policy applies to this class.

On the upper right hand corner of *every* assignment, please write your name, class period, date and assignment. All work must be shown and answers should be boxed. Make sure your handwriting is clear and legible.

## **CLASSWORK POLICY**

Classwork and class participation are worth 20% of the quarterly grade. It is so important to be an active and vocal participant in class. Questioning and discussing new material are critical to understanding challenging work. Students' notebooks will not be collected, but they may be assessed by pop notebook quizzes. Weekly do now sheets will be collected and graded; these make up the majority of the class work grade.

## **ABSENT POLICY**

Students are strongly encouraged not to be absent, but if you must, you will be responsible for turning in the assignment **due** the day they missed on the day they return. The homework **assigned** on the day they missed will be due the following day unless otherwise discussed. Students are responsible for seeing the teacher for missed assignments on the day of their return. If a student misses a test or a quiz, they are responsible for making up the missed quiz or test within a reasonable amount of time. See me on the day you return to schedule a time to make up a missed test or quiz.

## **HONORS POLICY**

The add/drop period ends September 30<sup>th</sup>, which is right before the first progress report (4<sup>th</sup>). If you failed math last year, you must have at least an 85 at that point. If you passed math last year, you must be in good standing (C or higher). If you do not meet these requirements, you will be asked to leave class and enrolled in Algebra II CP.

## **PRIMARY PERFORMANCE STANDARDS**

- Determine whether a given relation is a function and perform operations with functions
- Evaluate linear functions using function notation
- Graph and write linear functions and inequalities
- Write equations of parallel and perpendicular lines
- Model data using scatter plots
- Solve systems of equations and inequalities
- Define matrices; add, subtract, and multiply matrices
- Find determinants and inverses of matrices
- Solve systems of equations using matrices
- Use Vertex Theorem to find maximum and minimum values of a polygonal convex set
- Graph functions, relations, inverses, and inequalities
- Analyze families of graphs
- Investigate symmetry, continuity, end behavior, and transformation of graphs
- Find asymptotes, extrema of functions, and increasing and decreasing intervals
- Classify odd and even functions
- Solve absolute value inequalities
- Graph rational functions and determine vertical and horizontal asymptotes
- Solve problems involving direct, inverse, and joint variation
- Determine the roots of polynomial equations
- Solve quadratic equations
- Use the discriminant to describe the nature of roots of quadratics
- Find factors of polynomials using Remainder and Factor Theorems
- Identify all possible rational roots by using Rational Root Theorem
- Determine the number of positive and negative roots of a polynomial function

- Approximate the real zeros of a polynomial function by using the Location Principle
- Solve rational and radical equations
- Convert decimal degree measure to degrees, minutes, and seconds
- Identify angles that are coterminal with a given angle
- Solve triangles using Law of Sines and Cosines
- Find values of trigonometric functions using the unit circle
- Find values of trigonometric functions of an angle in standard position given a point on a terminal side
- Use trigonometry to find the measures of the sides of a right triangle
- Find the areas of triangles by Hero's formula
- Find areas of triangles with a given formula
- Evaluate inverse trigonometric functions
- Change radian measure to degree measure and vice versa
- Find the length of an arc given the measure of a central angle
- Find the area of a sector
- Graph sine, cosine, and tangent functions
- Graph functions with a given amplitude, period, phase shift, and vertical shift
- Identify and use reciprocal, quotient, and Pythagorean identities
- Use basic trigonometric identities to verify other identities
- Find numerical values of trigonometric functions
- Use the sum and difference identities for the sine, cosine, and tangent functions
- Use the double- and half-angle identities for the sine, cosine, and tangent functions
- Solve trigonometric equations
- Use standard and general forms of the equations of parabolas, circles, ellipses, and hyperbolas
- Graph parabolas, circles, ellipses, and hyperbolas
- Recognize conic sections by their equations
- Use multiple measures of center to determine trends in data
- Use multiple methods to determine the probability of a specific outcome

## **WEBSITES**

The internet can be used as a great learning tool! Here are a couple websites I suggest:

Math.com: <http://www.math.com/>

This provides good explanations, practice exercises, and instant feedback.

Free Math Help: <http://www.freemathhelp.com/algebra-help.html>

This site has some good, short videos if you want to review something we learned in class. There is also a message board to ask specific questions.

## **CLASS PROCEDURES**

- **Entering the Classroom:** Enter the classroom, pick up handouts at the front of the room and start the Do Now. When the bell rings, you should be silent with your materials out and your backpack on the floor. If you are coming in after the bell rings you are late and will receive a demerit.
- **Exiting the Classroom:** Wait to be dismissed by Ms. Franklin
- **Getting Out of Your Seat:** You must request permission to get out of your seat for any reason. Raise your hand and wait for Ms. Franklin to call on you.
- **Passing in Work:** Ms. Franklin will collect classwork most days and grade it for correction.
- **Leaving the Room:** You may go to the bathroom during appropriate times during class. You will not be allowed to go right after class begins and at the end of class. Raise your hand to ask if you must go and then sign out.
- **Absent:** If you are absent, you are responsible for making up the classwork and homework (and handing in the homework) within one day. Worksheets from your missed class will be left in the back of the classroom for you pickup. Ask a classmate for the notes and any textbook assignments. Come to tutoring with any questions or concerns. Extended absences will be handled on a case by case basis.
- **Preparedness:** If you arrive without any of your materials, please try to borrow them before the bell rings from a classmate. Once the bell rings, you will receive a demerit for being unprepared and will not be allowed to go to your locker to get what you forgot.
- **Demerits and detentions** will be awarded based on BCCS school policies.