



MIT Academy  
Mare Island Technology Academy  
Griffin Academy Middle School

Free Vallejo Public Independent Charter Schools

2 Positive Place, Vallejo, California, 94



## Pre-Calculus

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SY 2018- 2019

*Pre-Calculus with Trigonometry* is designed as the fourth course in a five-year sequence of college preparatory mathematics for high school students. In addition to covering all of the key concepts found in traditional trigonometry, pre-calculus, or math analysis courses, it emphasizes several big ideas that form a foundation for calculus and other college mathematics curricula.

The key ideas presented are:

- Transformations of functions
- Periodic functions and their graphs
- Area under a curve as a foundation for integration
- Inverses, exponentials, and logarithmic equations and applications
- Limits to infinity and at a point
- Properties of functions including continuity, increasing vs. decreasing, and concavity
- Average rates of change and instantaneous rates of change as a foundation for derivatives
- Other graphical systems including polar and parametric
- Applications of vectors and trigonometric functions
- Algebraic fluency and simplification techniques
- Modeling using a variety of functions

This course is structured around investigations and problem solving. Students will explore concepts and develop mathematical relationships through observation, application, and both formal and informal proof. Lessons are designed to facilitate teamwork and encourage students to pose conjectures, justify solutions and defend their thinking.

Some lessons are specifically designed to be teacher-directed, but most have strong components that require students to work in study teams. We expect that the lesson objectives found at the start of each lesson will provide valuable guidance. Concepts are developed over time so that students can master key ideas with conceptual understanding, not merely memorization.

Each chapter is divided into sections that focus on a major concept for the chapter. Individual lessons are focused on one or two key ideas that build into a core concept for the chapter. Students will investigate a concept or property and have the ideas summarized in the form of a “Math Note.” These notes allow students easy access for review if they struggle with a particular concept. Homework is designed as both a review of the day’s lesson as well as practice with concepts previously introduced. Each chapter concludes with a closure section that has review problems and often a “merge problem” that pulls together several ideas learned in the chapter.

## **GRADING POLICY**

### **Standards-Based Grading**

<b>Grade</b>	<b>Description</b>		<b>Grading Scale</b>	
<b>4.0</b>	Mastered	100	<b>A</b>	<b>90-100</b>
<b>3.5</b>	Mastered	95-99	<b>B</b>	<b>80-89</b>
<b>3.0</b>	Proficient (Meets Expectations)	90-94	<b>C</b>	<b>70-79</b>
<b>2.5</b>	Approaching Proficient	80-89	<b>F</b>	<b>&lt;70</b>
<b>2.0</b>	Basic Proficiency	70-79		
<b>1.5</b>	Basic with Help	65-69		
<b>1.0</b>	Basic with Help	60-64		
<b>0</b>	No skill demonstrated	50-59		

### **Technology Requirement**

Each student is allowed to use a Texas Instruments TI83+ Graphing Calculator or similar model. The calculator is a key component of this course which will be used to explore concepts, graph functions, solve equations, explore differentiability and establish relations between data, equations and graphs.

### **Course Components and Expectations**

**Core Problems:** Each section will consist of one to five core problems. These problems are absolutely necessary to discovering the ideas of algebra. These problems always require working in study teams and often require persistence in problem solving and using multiple analytic tools and strategies.

**Homework:** Each lesson will be followed by approximately ten problems to work on, for practice, outside of the regular class period. There will be Khan Academy videos, Study Island activities, etc.

**Assessments:** Students will demonstrate mastery of the course goals through a variety of assessments. There will be periodic announced and unannounced quizzes. Each unit will culminate in a summative assessment. Retakes are allowed and expected to do it within a PR or as soon as possible. Don't wait until the end of a semester.

**Interactive Notebook** All of the above work is to be maintained. There will be periodic, announced notebook checks.

### **Supplies needed for class**

*All supplies, materials and equipment needed for students to participate in MIT Academy's educational activities shall be provided to students by the school free of charge. However, a student may obtain required materials independently, in which case they get to keep them; whereas those students who receive materials from MIT may be charged a fee for the replacement of damaged, defaced, or unreturned school supplies.*

- pencils
- expo markers
- interactive notebook
- highlighter
- graph paper
- graphing calculator

### **Responsibility**

*There is much responsibility put on each of you to complete your assignments and to ask questions. In this classroom, everyone has a job to do. It is the job of the student to master the material and demonstrate this understanding by the end of the course. My job is to help you do your job. You also have a responsibility to provide an atmosphere of respect for everyone. I will make every reasonable effort to help you succeed. I look forward to a great year together!*

### **The Key to Success**

*Good note taking and regular practice problems completion correlate highly with a successful student. In other words, when a student takes notes and practice classwork/homework problems, he or she will be successful in this class.*

**AIM HIGH!**



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**Course:** Pre-Calculus

**Teacher:** Lumanglas

I have read the course syllabus, and I have shared its contents with my parents. Furthermore, I am aware of the standards-based grading policy that will form the basis of my evaluation and how my grade will be computed. I am aware that homework is an extension of the regular classwork, and it is for practice and to prepare myself for exams. I realized that I am required to maintain an interactive notebook containing all notes, activities, and other assignments.

\_\_\_\_\_ I have read the expectations, and I am aware of what is expected of me to successfully complete this class.

Student Signature:

\_\_\_\_\_

Parental support is requested to make sure that all assignments are completed and turned in on time. Parents are also asked to sign below, indicating that they have read this sheet and the course syllabus.

Child's Name: \_\_\_\_\_ Class Period: \_\_\_\_\_

Date: \_\_\_\_\_

\_\_\_\_\_ I have read the expectations, and I am aware of what is expected of my child to successfully complete this course.

\_\_\_\_\_ I have read the expectations, and I would like to discuss them further.

Parent(s) Name & Signature \_\_\_\_\_

Contact number/s \_\_\_\_\_

Email \_\_\_\_\_