



Academia Santa Rosa de Lima
Bayamón, Puerto Rico
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Academic Syllabus-Trigonometry-Bilingual Eleventh -2023-2024

- I. Trigonometry
- II. Teacher Brenda Oliver - boliver@asrpr.org
- III. Textbook - EduSystem-Trigonometry
- IV. Office hours - Please contact the Office for appointments
- V. Course Description and Introduction

The trigonometry course defines basic concepts (such as trigonometric ratios). It covers the study of the Calculation of Trigonometric Ratios of any angle (for example, what are the 4 quadrants). Study the main trigonometric identities emphasizing the study and demonstration of trigonometric formulas to solve any Triangle and to solve trigonometric equations.

The main topics are: angles and their measures, trigonometry in the right triangle, trigonometric functions, trigonometric identities, trigonometric equations, the Laws of Sines and Cosines, and inverses of trigonometric functions. This course highlights mathematical processes, recognizing that all mathematical processes are intertwined in any learning situation. These are: understanding problems as you develop your ability to solve them with confidence; reasoning in a concrete and semi-concrete way, until reaching quantitative abstraction; the construction and defense of viable arguments, as well as the understanding and criticism of the arguments and reasoning of others; the use of mathematics to solve everyday problems, using the appropriate and necessary tools (including technology) to solve problems in different contexts; the need for precision in their own reasoning and in discussions with others; the discernment and use of patterns or structures; and Identify and express regularity in repeated reasoning.

VI. Course Objectives

1. Review concepts related to triangles, such as sides, angles, triangle similarity, and ratios between triangle sides.
2. Establish all possible ratios between triangle sides.
3. Define the trigonometric ratios based on the ratios between the sides of a right triangle.
4. Become familiarized and define the concepts of hypotenuse, legs, opposite side, and adjacent side, which are related to right triangles.
5. Define and identify the trigonometric ratios $\sin \theta$, $\cos \theta$, and $\tan \theta$ for a θ angle.
6. Define and identify the reciprocal ratios of trigonometric ratios: $\csc \theta$, $\sec \theta$, and $\cot \theta$.
7. Become familiarized with the process of rationalizing the denominator in irrational expressions.
8. Apply the Pythagorean theorem to determine the length of any side in a right triangle.
9. Determine the value of the trigonometric ratios of triangles.
10. Establish the proportionality between the sides of right triangles and determine any missing measurements

11. Determine the equivalent angle and the reference angle formed by a terminal side containing an ordered pair on the coordinate plane.
12. Determine the ratios of an angle based on a given ordered pair on the coordinate plane.
13. Define the corresponding sign of trigonometric ratios based on their quadrant on the coordinate plane.
14. Demonstrate trigonometric identities based on the Pythagorean theorem.
15. Establish that an identity is represented by an equation that is true for any value of the variable for which both sides of the equation are defined.
16. Define and demonstrate the trigonometric quotient identities, $\tan \theta = \frac{\sin \theta}{\cos \theta}$ and $\cot \theta = \frac{\cos \theta}{\sin \theta}$

VII. Standards

Puerto Rico Degree Content Standards and Expectations

(Puerto Rico Core Standards):

The student is able to identify geometric shapes and dimensions, and use spatial knowledge to analyze their structures, characteristics, properties, and relationships.

to understand and discover the physical environment.

8.0 Explore and apply the Pythagorean Theorem to solve measurement problems.

8.G.8.2 Apply the Pythagorean theorem to:

determine the unknown length of the sides of a triangle both in two dimensions and in three-dimensional figures; Find the distance between two points on a coordinate plane.

7.0 Apply the concepts of congruence and similarity when using physical models, overheads, or geometry programming. Identify similar figures and justify these similarities by establish sufficient conditions and find rigid transformations that preserve similarity or dilations centered at the origin between figures. Solves problems of daily life that involve similarity in various contexts.

9.G.7.4 Use similarity to find measures of corresponding parts of similar figures, and apply similarity in a variety of contexts in mathematics and other disciplines. Use congruence criteria and similarity of triangles to solve problems and demonstrate relationships between geometric figures.

9.G.7.8 Prove theorems about triangles. It includes the following theorems: a line parallel to one of the sides of a triangle divides the other two proportionally, and vice versa. Prove the Pythagorean theorem using similar triangles.

VIII. Strategies

- Defined instructional sequence repeatedly practicing skills individually and in small groups
- Consistent communication between student and teacher
- Promoting ongoing practice and feedback
- Formative and summative evaluations based on
 - Exams
 - Quizzes
 - Projects
 - Assignments
 - Daily participation

IX. Reasonable Accommodations

All reasonable accommodations for the particular needs of these students will be made in accordance with the Americans with Disabilities Act (ADA).

X. Cell Phone Policy

Students may not use cell phones during class unless explicitly approved by the teacher on a day specifically for instructional purposes. Upon entering the classroom, all students are to place their cell phone in their assigned area of the

classroom or another assigned location specified at the front of the room by the teacher. Once placed in the cell phone/holder area, students may not access it during class hours, unless they have an early checkout from the college facility. school.

XI. Computer Devices and Resources

Per school policy, personal computers must be fully charged and brought to each class period. Students will not be asked to charge school devices in the classroom and are not entitled to make up assignments missed due to dead batteries. Failure to charge devices constitutes a disruption of class procedures and may result in disciplinary action.

XII. Materials

- EduSystem Platform
- Personal Computer
- Calculator
- Gridded Notebook
- Google Classroom Platform

XIII. Plagiarism

Plagiarism is presenting someone else's words or ideas as if they were entirely your own. Plagiarism is a violation of the Honor Code. Acts of plagiarism may include, but are not limited to: 1. Using words or ideas from a published source or from the Internet without proper permission; 2. Using another student's work (eg, copying another student's homework, composition, or project in whole or in part; 3. By excessive use of editing suggestions from another student, teacher, parent, or guardian or paid author.

XIV. Evaluation Criteria

- Exams- 3 per trimester
- Short tests and Quizzes
- worksheets or assessments
- Assignments
- Daily class 1 per semester

XV. Course Content

Unit	Lessons	
Fundamentals of Trigonometry	<ul style="list-style-type: none"> ● Trigonometric Functions and Acute Angles ● Trigonometric Functions of 30, 45, and 60 Degrees ● Functions of Complementary Angles 	August/ September
Trigonometric Functions of Any Angles	<ul style="list-style-type: none"> ● Generating Angles and Rectangular Coordinates ● Trigonometric Functions of Angles on Different Quadrants and the Unit Circle ● Reducing Angles in the Second, Third and 	September/ October

	<p>Fourth Quadrant to the First Quadrant</p> <ul style="list-style-type: none"> • The Sexagesimal System and Radians 	
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Variations of Trigonometric Ratios and their Graphs	<ul style="list-style-type: none"> • Graphic Representation of Trigonometric Ratios • Transformations of Sine, Cosine and Tangent Functions • Transformations of the Secant, Cosecant, and Cotangent Functions 	October/ November
Relationship between the Trigonometric Functions of an Angle and Trigonometric Identities	<ul style="list-style-type: none"> • Relationships between Trigonometric Functions • Representation of Trigonometric Ratios and Identities 	November/ December

	<ul style="list-style-type: none"> • Trigonometric Identities Part 1 • Trigonometric Identities Part 2 	January
Trigonometric Functions and the Sum and Differences of two Angles	<ul style="list-style-type: none"> • Sine and Cosine of the Sum or Difference of two Angles • Tangent of the Sum or Difference of two Angles • Secant, Cosecant, and Cotangent of the Sum or Difference of two Angles 	February

Multiple and Submultiple Angles	<ul style="list-style-type: none"> • Sine, Cosine, and Tangent of a Double Angle • Secant, Cosecant, and Cotangent of a Double Angle • Sine, Cosine, and Tangent of a Half Angle • Secant, Cosecant, and Cotangent of a Half Angle • Trigonometric Functions of a Triple Angle 	March
Formula to Transform the Sum or Difference of the Functions of two Angles in a Product	<ul style="list-style-type: none"> • Transform the Sum or Difference of the Sines and Cosines of Two Angles into a Product • Transform a Product into a Sum or a Difference • Solving Trigonometric Equations 	April

Solving Right Triangles and Applications	<ul style="list-style-type: none">● Solving Right Triangles with Two Known Legs● Solving Right Triangles with a Known Hypotenuse and a Leg● Solving Right Triangles with a Known Acute Angle and a Side● Applications of Solving Right Triangles	May
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This content layout is subject to changes due to the group's specific needs or other situations that may arise throughout the academic year.



Academia Santa Rosa de Lima
Bayamon, PR

I hereby confirm that I received the Syllabus for Trigonometry for the school year 2023-2024.

Student's name: _____ Group: 11th B On August
_____, 2023.

Student's signature Parent's Signature
