



# 2012 Curriculum Catalog

Trigonometry

### **Welcome to Alpha Omega Publications!**

We are excited that you are including Ignitia® as part of your program of instruction, and we look forward to serving you and your students.

Ignitia comes complete with a full, multimedia-rich curriculum for grades 3-12 in five core subjects and electives.

Thanks for choosing us!  
*Glynlyon Curriculum Development Team*

### **Alpha Omega Publications Technical Support**

Alpha Omega Publications' technical support is Ignitia's full-service technical support system. We exist to promote and preserve our customers' satisfaction. Our services include:

- Technical Support
- Product Configuration and Update Management

Please use the following information to contact Alpha Omega Publications' technical support:

**Online:**

Access our helpful Technical Support website simply by clicking on the life preserver located in the upper-right corner of any screen in our program!

**Telephone:**

Toll Free: 1-877-251-6662  
Monday – Friday 7 a.m. to 5 p.m. (CT)

## Table of Contents

Course Overview.....	1
UNIT 1: RIGHT TRIANGLE TRIGONOMETRY.....	1
UNIT 2: GRAPHING AND INVERSE FUNCTIONS.....	1
UNIT 3: ANALYTIC TRIGONOMETRY.....	2
UNIT 4: TRIGONOMETRIC APPLICATIONS.....	2
UNIT 5: POLAR COORDINATES.....	2
UNIT 6: COURSE REVIEW AND EXAM.....	2

### Course Overview

Trigonometry is a five-unit elective course for high school students who have successfully completed Algebra I, Geometry, and Algebra II. The materials cover a development of trigonometry from right triangle trigonometry to oblique triangles and the polar plane. Throughout the course, students will develop trigonometric formulas and use them in real-world applications, evaluate trigonometric proofs using complex trigonometric identities and solving trigonometric equations with regard to the unit circle.

The course seeks to help students expand their knowledge and skills so that they may achieve the following goals:

- Use trigonometry as a tool for indirect measurement.
- Model natural phenomenon with trigonometric functions.
- Perform operations with complex numbers using trigonometry.
- Use trigonometric identities to evaluate trigonometric proofs and solve trigonometric equations with regard to the unit circle.
- Solve for unknown sides and angles of right and oblique triangles using right triangle trigonometry, law of sines and law of cosines.

In attaining these goals, students will begin to see the "big picture" of mathematics and understand how numeric, algebraic, and geometric concepts are woven together to build a foundation for higher mathematical thinking.

UNIT 1: RIGHT TRIANGLE TRIGONOMETRY	
Assignment Titles	
1. Course Overview	13. Quiz 3: The Reciprocal Functions and Identities
2. Lengths of Sides	14. Radian Measure
3. Angle Measures	15. Reference Angles
4. Indirect Measure	16. Velocity
5. Quiz 1: Solving a Right Triangle	17. Quiz 4: Radian Measure
6. Angles in the Coordinate Plane	18. Project: Parametric Equations
7. The Unit Circle	19. Special Project
8. Trigonometric Values of Special Angles	20. Review
9. Quiz 2: The Unit Circle and Special Angles	21. Test
10. Reciprocal Functions	22. Alternate Test
11. Points on the Terminal Side	23. Glossary and Credits
12. Pythagorean Identities	

UNIT 2: GRAPHING AND INVERSE FUNCTIONS	
Assignment Titles	
1. Graphing and Amplitude	10. Trigonometric Equations: Part II
2. Project: The Reciprocal Functions	11. Quiz 2: Inverse Trigonometric Functions
3. Period and Frequency	12. Project: Modeling with Periodic Functions
4. Vertical and Horizontal Translations	13. Special Project
5. Sinusoidal Functions	14. Review
6. Quiz 1: Graphing	15. Test
7. Inverse Functions	16. Alternate Test
8. Inverse Reciprocal Functions	17. Glossary and Credits
9. Trigonometric Equations: Part I	

**UNIT 3: ANALYTIC TRIGONOMETRY**
**Assignment Titles**

- |   |  |
|---|--|
| 1. The Fundamental Trigonometric Identities | 10. Converting Between Products and Sums |
| 2. Proving Identities                       | 11. Quiz 2: More Identities              |
| 3. Cosine Addition Formula                  | 12. Project: Adding Waves                |
| 4. Sine Addition Formula                    | 13. Special Project                      |
| 5. Tangent Addition Formula                 | 14. Review                               |
| 6. Quiz 1: Identities and Addition Formulas | 15. Test                                 |
| 7. Double-Angle Formulas                    | 16. Alternate Test                       |
| 8. Project: Solving Equations Graphically   | 17. Glossary and Credits                 |
| 9. Half-Angle Formulas                      |  |

**UNIT 4: TRIGONOMETRIC APPLICATIONS**
**Assignment Titles**

- |  |                           |
|--|---------------------------|
| 1. Law of Sines                              | 9. Navigation Application |
| 2. Ambiguity and Area of a Triangle          | 10. Vector Multiplication |
| 3. Law of Cosines: Finding a Side            | 11. Quiz 2: Vectors       |
| 4. Law of Cosines: Finding an Angle          | 12. Special Project       |
| 5. Project: Heron's Formula                  | 13. Review                |
| 6. Quiz 1: Trigonometry of Oblique Triangles | 14. Test                  |
| 7. Introduction to Vectors                   | 15. Alternate Test        |
| 8. Vector Components                         | 16. Glossary and Credits  |

**UNIT 5: POLAR COORDINATES**
**Assignment Titles**

- |   |                             |
|---|-----------------------------|
| 1. Introduction to Polar Coordinates    | 9. Powers and Nth Roots     |
| 2. Polar Equations                      | 10. Project: Fractals       |
| 3. Project: Graphing in the Polar Plane | 11. Quiz 2: Complex Numbers |
| 4. Polar Curves                         | 12. Special Project         |
| 5. Polar Forms of Conics                | 13. Review                  |
| 6. Quiz 1: Polar Equations              | 14. Test                    |
| 7. Polar Form of Complex Numbers        | 15. Alternate Test          |
| 8. Multiply and Divide Complex Numbers  | 16. Glossary and Credits    |

**UNIT 6: COURSE REVIEW AND EXAM**
**Assignment Titles**

- |           |                   |
|-----------|-------------------|
| 1. Review | 3. Alternate Exam |
| 2. Exam   |                   |