Thinkwell's Homeschool Trigonometry Course Lesson Plan: 36 weeks

Welcome to Thinkwell's Homeschool Trigonometry! We're thrilled that you've decided to make us part of your homeschool curriculum. This lesson plan is meant to be a guide for you and your homeschool student. Each day, you'll tackle a different topic and all the materials associated with that topic, such as video lectures, exercises, notes, and sample problems. If you follow our day-by-day schedule, you'll complete the full curriculum for the course in 36 weeks. Feel free to modify and amend the plan as it best works for you. And, as always, please <u>let us know</u> what we can do to help get you up and running with Thinkwell's Trigonometry!

Week 1	
Chapter 1: Algebraic Prerequisites	
Assignments	Notes
<u>Week 1, Day 1</u>	
1.1.1 Using the Cartesian System	
<u>Week 1, Day 2</u>	
1.1.2 Thinking Visually	
<u>Week 1, Day 3</u>	
1.2.1 Finding the Distance between Two Points	
<u>Week 1, Day 4</u>	
1.2.2 Finding the Second Endpoint of a Segment	
<u>Week 1, Day 5</u>	
1.3.1 Collinearity and Distance	

Week 2	
Chapter 1: Algebraic Prerequisites	
Assignments	Notes
Week 2, Day 1	
1.3.2 Triangles	
Week 2, Day 2	
1.4.1 Finding the Center-Radius Form of the Equation of a Circle	
Week 2, Day 3	
1.4.2 Finding the Center and Radius of a Circle	
Week 2, Day 4	
1.4.3 Decoding the Circle Formula	
Week 2, Day 5	
1.4.4 Solving Word Problems Involving Circles	

Week 3	
Chapter 1: Algebraic Prerequisites	
Assignments	Notes
<u>Week 3, Day 1</u>	
1.5.1 Graphing Equations by Locating Points	
Week 3, Day 2	
1.5.2 Finding the x- and y-Intercepts of an Equation	
<u>Week 3, Day 3</u>	
1.6.1 Functions and the Vertical Line Test	
Week 3, Day 4	
1.6.2 Identifying Functions	
<u>Week 3, Day 5</u>	
1.6.3 Function Notation and Finding Function Values	

Week 4	
Chapter 1: Algebraic Prerequisites	
Assignments	Notes
Week 4, Day 1	
1.7.1 Determining Intervals Over Which a Function Is Increasing	
Week 4, Day 2	
1.7.2 Evaluating Piecewise-Defined Functions for Given Values	
Week 4, Day 3	
1.7.3 Solving Word Problems Involving Functions	
Week 4, Day 4	
1.8.1 Finding the Domain and Range of a Function	
1.8.2 Domain and Range: One Explicit Example	
Week 4, Day 5	
1.8.3 Satisfying the Domain of a Function	

Week 5	
Chapter 1: Algebraic Prerequisites	
Assignments	Notes
Week 5, Day 1	
1.9.1 An Introduction to Slope	
1.9.2 Finding the Slope of a Line Given Two Points	
Week 5, Day 2	
1.9.3 Interpreting Slope from a Graph	
Week 5, Day 3	
1.9.4 Graphing a Line Using Point and Slope	
Week 5, Day 4	
1.10.1 Writing an Equation in Slope-Intercept Form	
Week 5, Day 5	
1.10.2 Writing an Equation Given Two Points	

Week 6	
Chapter 1: Algebraic Prerequisites	
Assignments	Notes
<u>Week 6, Day 1</u>	
1.10.3 Writing an Equation in Point-Slope Form	
Week 6, Day 2	
1.10.4 Matching a Slope-Intercept Equation with Its Graph	
Week 6, Day 3	
1.10.5 Slope for Parallel and Perpendicular Lines	
Week 6, Day 4	
1.11.1 Graphing Some Important Functions	
Week 6, Day 5	
1.11.2 Graphing Piecewise-Defined Functions	

Week 7	
Chapter 1: Algebraic Prerequisites	
Assignments	Notes
<u>Week 7, Day 1</u>	
1.11.3 Matching Equations with Their Graphs	
<u>Week 7, Day 2</u>	
1.12.1 Shifting Curves along Axes	
<u>Week 7, Day 3</u>	
1.12.2 Shifting or Translating Curves along Axes	
<u>Week 7, Day 4</u>	
1.12.3 Stretching a Graph	
<u>Week 7, Day 5</u>	
1.12.4 Graphing Quadratics Using Patterns	

Week 8	
Chapter 1: Algebraic Prerequisites	
Assignments	Notes
<u>Week 8, Day 1</u>	
1.13.1 Determining Symmetry	
Week 8, Day 2	
1.13.2 Reflections	
Week 8, Day 3	
1.13.3 Reflecting Specific Functions	
Week 8, Day 4	
1.14.1 Deconstructing the Graph of a Quadratic Function	
Week 8, Day 5	
1.14.2 Nice-Looking Parabolas	

Week 9	
Chapter 1: Algebraic Prerequisites	
Assignments	Notes
<u>Week 9, Day 1</u>	
1.14.3 Using Discriminants to Graph Parabolas	
Week 9, Day 2	
1.14.4 Maximum Height in the Real World	
Week 9, Day 3	
1.15.1 Finding the Vertex by Completing the Square	
Week 9, Day 4	
1.15.2 Using the Vertex to Write the Quadratic Equation	
Week 9, Day 5	
1.15.3 Finding the Maximum or Minimum of a Quadratic	

Week 10	
Chapter 1: Algebraic Prerequisites	
Assignments	Notes
<u>Week 10, Day 1</u>	
1.15.4 Graphing Parabolas	
Week 10, Day 2	
1.16.1 Using Operations on Functions	
Week 10, Day 3	
1.16.2 Composite Functions	
Week 10, Day 4	
1.16.3 Components of Composite Functions	
Week 10, Day 5	
1.16.4 Finding Functions That Form a Given Composite	

Week 11	
Chapter 1: Algebraic Prerequisites	
Assignments	Notes
<u>Week 11, Day 1</u>	
1.16.5 Finding the Difference Quotient of a Function	
Week 11, Day 2	
1.17.1 Understanding Rational Functions	
Week 11, Day 3	
1.17.2 Basic Rational Functions	
Week 11, Day 4	
1.18.1 Vertical Asymptotes	

Week 11, Day 5	
□ 1.18.2 Horizontal Asymptotes	

Week 12	
Chapter 1: Algebraic Prerequisites	
Assignments	Notes
<u>Week 12, Day 1</u>	
1.18.3 Graphing Rational Functions	
<u>Week 12, Day 2</u>	
1.18.4 Graphing Rational Functions: More Examples	
<u>Week 12, Day 3</u>	
1.19.1 Understanding Inverse Functions	
<u>Week 12, Day 4</u>	
1.19.2 The Horizontal Line Test	
<u>Week 12, Day 5</u>	
1.19.3 Are Two Functions Inverses of Each Other?	

Week 13	
Chapter 1: Algebraic Prerequisites	
Chapter 1 Test	
Assignments	Notes
Week 13, Day 1	
1.19.4 Graphing the Inverse	
Week 13, Day 2	
1.20.1 Finding the Inverse of a Function	
Week 13, Day 3	
1.20.2 Finding the Inverse of a Function with Higher Powers	
Week 13, Day 4	
Chapter 1 Practice Test	
Week 13, Day 5	Chapter 1 Test
Chapter 1 Test	Score:

Week 14	
Chapter 2: The Trigonometric Functions	
Assignments	Notes
<u>Week 14, Day 1</u>	
2.1.1 Finding the Quadrant in Which an Angle Lies	
2.1.2 Finding Coterminal Angles	
Week 14, Day 2	
2.1.3 Finding the Complement and Supplement of an Angle	

Week 14, Day 3	
2.1.4 Converting between Degrees and Radians	
Week 14, Day 4	
2.1.5 Using the Arc Length Formula	
Week 14, Day 5	
2.2.1 An Introduction to the Trigonometric Functions	

Week 15	
Chapter 2: The Trigonometric Functions	
Assignments	Notes
<u>Week 15, Day 1</u>	
2.2.2 Evaluating Trigonometric Functions for an Angle in a Right	
Triangle	
<u>Week 15, Day 2</u>	
2.2.3 Finding an Angle Given the Value of a Trigonometric	
Function	
<u>Week 15, Day 3</u>	
2.2.4 Using Trigonometric Functions to Find Unknown Sides of	
Right Triangles	
2.2.5 Finding the Height of a Building	
<u>Week 15, Day 4</u>	
2.3.1 Evaluating Trigonometric Functions for an Angle in the	
Coordinate Plane	
<u>Week 15, Day 5</u>	
2.3.2 Evaluating Trigonometric Functions Using the Reference	
Angle	

Week 16	
Chapter 2: The Trigonometric Functions	
Assignments	Notes
<u>Week 16, Day 1</u>	
2.3.3 Finding the Value of Trigonometric Functions Given	
Information about the Values of Other Trigonometric Functions	
<u>Week 16, Day 2</u>	
2.3.4 Trigonometric Functions of Important Angles	
<u>Week 16, Day 3</u>	
2.4.1 An Introduction to the Graphs of Sine and Cosine Functions	
2.4.2 Graphing Sine or Cosine Functions with Different	
Coefficients	
Week 16, Day 4	
2.4.3 Finding Maximum and Minimum Values and Zeros of Sine	
and Cosine	
Week 16, Day 5	

□ 2.4.4 Solving Word Problems Involving Sine or Cosine Functions

Week 17	
Chapter 2: The Trigonometric Functions	
Assignments	Notes
<u>Week 17, Day 1</u>	
2.5.1 Graphing Sine and Cosine Functions with Phase Shifts	
<u>Week 17, Day 2</u>	
2.5.2 Fancy Graphing: Changes in Period, Amplitude, Vertical	
Shift, and Phase Shift	
<u>Week 17, Day 3</u>	
2.6.1 Graphing the Tangent, Secant, Cosecant, and Cotangent	
Functions	
<u>Week 17, Day 4</u>	
2.6.2 Fancy Graphing: Tangent, Secant, Cosecant, and Cotangent	
2.6.3 Identifying a Trigonometric Function from its Graph	
Week 17, Day 5	
2.7.1 An Introduction to Inverse Trigonometric Functions	

Week 18	
Chapter 2: The Trigonometric Functions	
Chapter 2 Test	
Assignments	Notes
Week 18, Day 1	
2.7.2 Evaluating Inverse Trigonometric Functions	
Week 18, Day 2	
2.7.3 Solving an Equation Involving an Inverse Trigonometric	
Function	
<u>Week 18, Day 3</u>	
2.7.4 Evaluating the Composition of a Trigonometric Function	
and Its Inverse	
2.7.5 Applying Trigonometric Functions: Is He Speeding?	
<u>Week 18, Day 4</u>	
Chapter 2 Practice Test	
Week 18, Day 5	Chapter 2 Test
Chapter 2 Test	Score:

Week 19	
Chapter 3: Trigonometric Identities	
Assignments	Notes
<u>Week 19, Day 1</u>	

3.1.1 Fundamental Trigonometric Identities
3.1.2 Finding All Function Values
Week 19, Day 2
3.2.1 Simplifying a Trigonometric Expression Using Trigonometric
Identities
Week 19, Day 3
3.2.2 Simplifying Trigonometric Expressions Involving Fractions
Week 19, Day 4
3.2.3 Simplifying Products of Binomials Involving Trigonometric
Functions
Week 19, Day 5
3.2.4 Factoring Trigonometric Expressions

Week 20	
Chapter 3: Trigonometric Identities	
Assignments	Notes
<u>Week 20, Day 1</u>	
3.2.5 Determining Whether a Trigonometric Function Is Odd,	
Even, or Neither	
<u>Week 20, Day 2</u>	
3.3.1 Proving an Identity	
3.3.2 Proving an Identity: Other Examples	
<u>Week 20, Day 3</u>	
3.4.1 Solving Trigonometric Equations	
<u>Week 20, Day 4</u>	
3.4.2 Solving Trigonometric Equations by Factoring	
<u>Week 20, Day 5</u>	
3.4.3 Solving Trigonometric Equations with Coefficients in the	
Argument	

Week 21	
Chapter 3: Trigonometric Identities	
Assignments	Notes
<u>Week 21, Day 1</u>	
3.4.4 Solving Trigonometric Equations Using the Quadratic	
Formula	
<u>Week 21, Day 2</u>	
3.4.5 Solving Word Problems Involving Trigonometric Equations	
<u>Week 21, Day 3</u>	
3.5.1 Identities for Sums and Differences of Angles	
Week 21, Day 4	
3.5.2 Using Sum and Difference Identities	
3.5.3 Using Sum and Difference Identities to Simplify an	

Expression	
<u>Week 21, Day 5</u>	
3.6.1 Confirming a Double-Angle Identity	

Week 22	
Chapter 3: Trigonometric Identities	
Assignments	Notes
<u>Week 22, Day 1</u>	
3.6.2 Using Double-Angle Identities	
Week 22, Day 2	
3.6.3 Solving Word Problems Involving Multiple-Angle Identities	
Week 22, Day 3	
3.7.1 Using a Cofunction Identity	
Week 22, Day 4	
3.7.2 Using a Power-Reducing Identity	
Week 22, Day 5	
3.7.3 Using Half-Angle Identities to Solve a Trigonometric	
Equation	

Week 23	
Chapter 3 Test	
Midterm Exam	
Assignments	Notes
<u>Week 23, Day 1</u>	
Chapter 3 Practice Test	
Week 23, Day 2	Chapter 3 Test
Chapter 3 Test	Score:
Week 23, Day 3	
Study for Midterm Exam	
Week 23, Day 4	
Practice Midterm	
Week 23, Day 5	Midterm Exam
Midterm Exam	Score:

Week 24	
Chapter 4: Applications of Trigonometry	
Assignments	Notes
Week 24, Day 1	
4.1.1 The Law of Sines	
4.1.2 Solving a Triangle Given Two Sides and One Angle	

Week 24, Day 2	
4.1.3 Solving a Triangle (SAS): Another Example	
Week 24, Day 3	
4.1.4 The Law of Sines: An Application	
Week 24, Day 4	
4.2.1 The Law of Cosines	
<u>Week 24, Day 5</u>	
4.2.2 The Law of Cosines (SSS)	
4.2.3 The Law of Cosines (SAS): An Application	

Week 25	
Chapter 4: Applications of Trigonometry	
Assignments	Notes
<u>Week 25, Day 1</u>	
4.2.4 Heron's Formula	
<u>Week 25, Day 2</u>	
4.3.1 An Introduction to Vectors	
4.3.2 Finding the Magnitude and Direction of a Vector	
<u>Week 25, Day 3</u>	
4.3.3 Vector Addition and Scalar Multiplication	
<u>Week 25, Day 4</u>	
4.4.1 Finding the Components of a Vector	
<u>Week 25, Day 5</u>	
4.4.2 Finding a Unit Vector	
4.4.3 Solving Word Problems Involving Velocity or Forces	

Week 26	
Chapter 4 Test	
Chapter 5: Complex Numbers and Polar Coordinates	
Assignments	Notes
Week 26, Day 1	
Chapter 4 Practice Test	
Week 26, Day 2	Chapter 4 Test
Chapter 4 Test	Score:
Week 26, Day 3	
5.1.1 Introducing and Writing Complex Numbers	
5.1.2 Rewriting Powers of i	
Week 26, Day 4	
5.1.3 Adding and Subtracting Complex Numbers	
Week 26, Day 5	

5.1.4 Multiplying Complex Numbers	

Week 27	
Chapter 5: Complex Numbers and Polar Coordinates	
Assignments	Notes
<u>Week 27, Day 1</u>	
5.1.5 Dividing Complex Numbers	
<u>Week 27, Day 2</u>	
5.2.1 Graphing a Complex Number and Finding Its Absolute	
Value	
5.2.2 Expressing a Complex Number in Trigonometric or Polar	
Form	
<u>Week 27, Day 3</u>	
5.2.3 Multiplying and Dividing Complex Numbers in	
Trigonometric or Polar Form	
<u>Week 27, Day 4</u>	
5.3.1 Using DeMoivre's Theorem to Raise a Complex Number to	
a Power	
<u>Week 27, Day 5</u>	
5.3.2 Roots of Complex Numbers	

Week 28	
Chapter 5: Complex Numbers and Polar Coordinates	
Chapter 5 Test	
Assignments	Notes
Week 28, Day 1	
5.3.3 More Roots of Complex Numbers	
5.3.4 Roots of Unity	
Week 28, Day 2	
5.4.1 An Introduction to Polar Coordinates	
Week 28, Day 3	
5.4.2 Converting between Polar and Rectangular Coordinates	
5.4.3 Graphing Simple Polar Equations	
Week 28, Day 4	
Chapter 5 Practice Test	
Week 28, Day 5	Chapter 5 Test
Chapter 5 Test	Score:

Week 29

Chapter 6: Exponential and Logarithmic Functions

Assignments	Notes
Week 29, Day 1	
6.1.1 An Introduction to Exponential Functions	
6.1.2 Graphing Exponential Functions: Useful Patterns	
Week 29, Day 2	
6.1.3 Graphing Exponential Functions: More Examples	
Week 29, Day 3	
6.2.1 Using Properties of Exponents to Solve Exponential	
Equations	
<u>Week 29, Day 4</u>	
6.2.2 Finding Present Value and Future Value Equations	
Week 29, Day 5	
6.2.3 Finding an Interest Rate to Match Given Goals	

Week 30	
Chapter 6: Exponential and Logarithmic Functions	
Assignments	Notes
<u>Week 30, Day 1</u>	
□ 6.3.1 <i>e</i>	
6.3.2 Applying Exponential Functions	
Week 30, Day 2	
6.4.1 An Introduction to Logarithmic Functions	
Week 30, Day 3	
6.4.2 Converting between Exponential and Logarithmic Functions	
Week 30, Day 4	
6.5.1 Finding the Value of a Logarithmic Function	
Week 30, Day 5	
6.5.2 Solving for x in Logarithmic Equations	
6.5.3 Graphing Logarithmic Functions	

Week 31	
Chapter 6: Exponential and Logarithmic Functions	
Assignments	Notes
Week 31, Day 1	
6.5.4 Matching Logarithmic Functions with Their Graphs	
Week 31, Day 2	
6.6.1 Properties of Logarithms	
Week 31, Day 3	
6.6.2 Expanding a Logarithmic Expression Using Properties	
Week 31, Day 4	
6.6.3 Combining Logarithmic Expressions	

Week 31, Day 5	
6.7.1 Evaluating Logarithmic Functions Using a Calculator	
6.7.2 Using the Change of Base Formula	

Week 32	
Chapter 6: Exponential and Logarithmic Functions	
Assignments	Notes
<u>Week 32, Day 1</u>	
6.8.1 The Richter Scale	
6.8.2 The Distance Modulus Formula	
Week 32, Day 2	
6.9.1 Solving Exponential Equations	
Week 32, Day 3	
6.9.2 Solving Logarithmic Equations	
Week 32, Day 4	
6.9.3 Solving Equations with Logarithmic Exponents	
Week 32, Day 5	
6.10.1 Compound Interest	
6.10.2 Predicting Change	

Week 33	
Chapter 6: Exponential and Logarithmic Functions	
Chapter 6 Test	
Assignments	Notes
<u>Week 33, Day 1</u>	
6.11.1 An Introduction to Exponential Growth and Decay	
Week 33, Day 2	
6.11.2 Half-Life	
6.11.3 Newton's Law of Cooling	
Week 33, Day 3	
6.11.4 Continuously Compounded Interest	
Week 33, Day 4	
Chapter 6 Practice Test	
Week 33, Day 5	Chapter 6 Test
Chapter 6 Test	Score:

Week 34	
Chapter 7: Conic Sections	
Assignments	Notes
Week 34, Day 1	
7.1.1 An Introduction to Conic Sections	

7.1.2 An Introduction to Parabolas	
<u>Week 34, Day 2</u>	
7.1.3 Determining Information about a Parabola from Its	
Equation	
Week 34, Day 3	
7.1.4 Writing an Equation for a Parabola	
<u>Week 34, Day 4</u>	
7.2.1 An Introduction to Ellipses	
Week 34, Day 5	
7.2.2 Finding the Equation for an Ellipse	

Week 35	
Chapter 7: Conic Sections	
Assignments	Notes
<u>Week 35, Day 1</u>	
7.2.3 Applying Ellipses: Satellites	
Week 35, Day 2	
7.3.1 An Introduction to Hyperbolas	
Week 35, Day 3	
7.3.2 Finding the Equation for a Hyperbola	
<u>Week 35, Day 4</u>	
7.3.3 Applying Hyperbolas: Navigation	
Week 35, Day 5	
7.4.1 Identifying a Conic	
7.4.2 Name That Conic	

Week 36	
Chapter 7 Test	
Final Exam	
Assignments	Notes
<u>Week 36, Day 1</u>	
Chapter 7 Practice Test	
Week 36, Day 2	Chapter 7 Test
Chapter 7 Test	Score:
Week 36, Day 3	
Study for Final Exam	
Week 36, Day 4	
Practice Final	
Week 36, Day 5	Final Exam
Final Exam	Score: