Your progress ⑦

Algebra 2, Part 2

How to Take This Course

Complete all the quizzes and the assignment in each unit. Once the quizzes for a unit are complete, you will have access to the unit test. You will have access to the final exam when all of the unit tests are complete, and the assignments are completed and graded.

Please allow for 2-3 days per assignment for grading. Read the full course instructions so you understand how this course works.

📘 How This Course Works

📕 Instructions for the Course

🔗 Ask The Teacher

     Meet your teacher for this course and ask a question.

Unit 1 Exponents, Roots, Radicals

In this unit we will learn:

- How to work with exponents, including both positive and negative power exponents.
- To understand that a positive exponent leads to an increasing graph while a negative exponent leads to a decreasing graph.
- To develop an understanding of the relationship between roots and exponents, and their reciprocal relationship, and how to solve equations with roots and equations with exponents.
- How to manipulate and work with radical equations and to perform operations with radical expressions, including how to add and subtract like radicals.
- How to simplify radicals in fractions, understanding how to rationalize a denominator by multiplying top and bottom by the root in the denominator or by multiplying the top and bottom by the conjugate of the denominator.
- How to convert repeating decimals to a fraction.

📘 1.1 Positive and Negative Powers

     📋 Quiz on 1.1 - Positive and Negative Powers   ⬚

📘 1.2 Roots and Exponents

     📋 Quiz on 1.2 Roots and Exponents   ⬚

📘 1.3 Radical Equations and Operations

     📋 Quiz on 1.3 - Radical Equations and Operations   ⬚

📘 1.4 Radicals in Fractions

     📋 Quiz on 1.4 Radicals in Fractions   ⬚

📘 1.5 Fractions in the Exponent

1.5 Fractions in the Exponent

   Quiz on 1.5 - Fractions in the exponent

1.6 Writing Repeating Decimals as Fractions

   Quiz on 1.6 - Writing Repeating Decimals as Fractions.

Unit 1 Assigment

Unit 2 Exponential and Logarithmic Functions

In this unit we will learn:

- How to identify and analyze exponential functions, paying special attentions to the end behavior of graphs based on the key characteristics of the function.
- How to use this understanding of exponential functions to solve exponential equations and how to be aware of domain and range restrictions for exponential equations.
- How to manipulate exponential equations and expressions with the base 10.
- To grasp an understanding of base e expressions and equations, and that base e and the natural log are inverses of one another.

2.1 Exponential Functions

   Quiz on 2.1 - Exponential Functions

2.2 Exponential Equations

   Quiz on 2.2 - Exponential Equations

2.3 Exponents with Base 10

   Quiz on 2.3 - Exponents with Base 10

2.4 Base e

   Quiz on 2.4 - Base e

2.5 Scientific Notation

   Quiz on 2.5 - Scientific Notation

2.6 Inverse Functions

   Quiz on 2.6 - Inverse Functions

2.7 Properties of Log Functions

   Quiz on 2.7 - Properties of Log Functions

2.8 Logarithmic Equations

   Quiz on 2.8 - Logarithmic Equations

2.9 Translation of Exponential and Logarithmic Graphs

   Quiz on 2.9 - Translation of Exponential and Logarithmic Graphs

Unit 2 Assignment

Unit 3 Conic Sections- Solving, Graphing

In this unit we will learn:

- The equations for and graphs of conicsections, including those for circle, ellipses, hyperbolas, and parabolas.
- How to decipher the center and radius of a circle, given its equations, as well as match graphs of circles to their equations.
- How to put equations for circles into standard form, so they can be analyzed more easily.
- To master ellipses and how to sketch an ellipse from its equations by identifying its center, major and minor axis, and focal points.
- The parts and characteristics of hyperbolas and how to sketch their graphs, given an equation.
- To become proficient in graphing parabolas using key components of their equations, such as their vertex, axis of symmetry, and focus.
- How to distinguish between circles, ellipses, hyperbolas, and parabolas, using only their equations.

3.1 Circles: Equations & Graphs of

   Quiz on 3.1 - Circles : Equations & Graphs of

3.2 Ellipses: Equations & Graphs of

   Quiz on 3.2 - Ellipses: Equations & Graphs of

3.3 Hyperbolas: Equations & Graphs of

Quiz on 3.3 - Hyperbolas: Equations & Graphs of

3.4 Parabolas: Equations & Graphs of

Quiz on 3.4 - Parabolas: Equations & Graphs of

Unit 3 Assignment

Unit 4 Trigonometry

In this unit we will learn:

- How to solve for the six trigonometric functions and to determine the sine, Cosine, Tangent, Cosecant, Secant, and Cotangent of given the sketch of a right triangle.
- How to find the remaining trigonometric functions given one of the six trig functions.
- How to convert between radians and degrees and how to solve problems in which a certain angle is expressed in either and is to be converted to the other.
- To gain a mastery of recognizing and working with special triangles, knowing the ratios of the sides of 30-60-90 triangles and 45-45-90 triangles. How to solve for missing sides of special triangles given one side length and two angles.

4.1 Sin, Cos, Tan, Cosec, Sec, Cot

Quiz on 4.1 - Sin, Cos, Tan, Cosec, Sec, Cot

4.2 Converting Between Radians & Degrees

Quiz on 4.2 - Converting Between Radians & Degrees

4.3 Trig Ratios of Special Angles

Quiz on 4.3 - Trig Ratios of Special Angles

4.4 The Unit Circle

Quiz on 4.4 - The Unit Circle

4.5 The Law of Sines

Quiz on 4.5 - The Law of Sines

4.6 The Law of Cosines

Quiz on 4.6 - The Law of Cosines

Unit 4 Assignment

Unit 5 Permutation & Combinations

In this unit we will learn:

- How to solve real life problems involving permutations and combinations, with scenarios like how many ways a certain number of players can form a roster, or how many ways some friends can be arranged in a photo.
- How to assess whether a combination or a permutation is required to solve a particular problem, and how to perform the appropriate calculation. How to solve random chance probability problems and to solve both "replacement" and "without replacement" problems.
- How to use the binomial theorem to raise polynomials to large powers.

5.1 Permutations

Quiz on 5.1 - Permutations

5.2 Combinations

Quiz on 5.2 - Combinations

5.3 Basic Probability

Quiz on 5.3 - Basic Probability

5.4 Binomial Theorem

Quiz on 5.4 - Binomial Theorem

Unit 5 Assignment

Unit 6 Sequence and Series

In this unit we will learn:

- How to identify and manipulate arithmetic sequence to solve for nth terms within that sequence, up to any value for n.
- How to create a formula for solving for the nth term, given as few as two or three values within the arithmetic sequence.
- How to work to find the sum of n terms of an arithmetic sequence, up to any value for n.
- To master the identification of geometric sequences, how to find the common ratio, and to solve for an nth term.
- How to find the sum of any geometric sequence for up to any value of n.
- How to identify an infinite series and to understand when it is possible to find the sum of a converging infinite series, or how to identify a diverging infinite series, and realize that no sum exists.
- In the case that a sum does exist for an infinite series, how to find that sum.

📅 6.1 Arithmetic Sequence (nth Term)

　　📋 Quiz on 6.1 - Arithmetic Sequence (nth Term)

📅 6.2 Arithmetic Series (Sum Of)

　　📋 Quiz on 6.2 - Arithmetic Series (Sum of)

📅 6.3 Geometric Sequence (nth Term)

　　📋 Quiz on 6.3 - Geometric Sequence (nth Term)

📅 6.4 Geometric Series (Sum Of)

　　📋 Quiz on 6.4 - Geometric Series (Sum of)

📅 6.5 Sum of Infinite Series

　　📋 Quiz on 6.5 - Sum of Infinite Series.

📄 Unit 6 Assignment

Unit 7 Complex Numbers (i), Operations w/ Functions

In this unit we will learn:

- Complex numbers and the notion of imaginary numbers and solutions. How to perform Basic operations with complex numbers and how to add, subtract, multiply, and divide complex numbers.
- In the case of dividing complex numbers, how to multiply the numerator and denominator of complex fractions by the "conjugate" of the complex number in the denominator.
- How to answer all complex number problems in the standard form, upon their simplification.
- How to perform the composition of functions, in which one function is substituted in for the input variable of another.

📅 7.1 Basic Operations With Complex Numbers

　　📋 Quiz on 7.1 - Basic Operations with Complex Numbers

📅 7.2 Multiplying and Dividing Complex Numbers

　　📋 Quiz on 7.2 - Multiplying and Dividing Complex Numbers.

📅 7.3 Adding & Subtracting Functions

　　📋 Quiz on 7.3 - Adding and Subtracting Functions

📅 7.4 Multiplying & Dividing Functions

　　📋 Quiz on 7.4 - Multiplying & Dividing Functions

📅 7.5 Composition of Functions

　　📋 Quiz on 7.5 - Composition of Functions

📄 Unit 7 Assignment

The Final Exam

Once you have completed all of the unit tests **and** all of your assignments have been graded, the final exam will become visible.

Warning: You have only ONE attempt at the final. You must score 60% or higher in the final to receive credit for the course!

Are you ready to take the final? We highly recommend you take the practice final first and if you are weak in any area, review the relevant course material again. You have unlimited attempts at the practice final; it will help you to prepare.

Good Luck!!

Course Completion

The "Certificate" and "Transcript Request" links below are not active, they cannot be accessed until you have achieved at least 60% on both the final and for the course total. Upon satisfying these two requirements, the links will become active and you can use them.

Before you go, we would appreciate your opinion on the course, please take 1 minute to complete the feedback form. We hope you enjoyed this course!

🔗 Course Feedback

Thank you for taking this course! Let us know what you think about it.

‹› Request a Course Completion Record

If you need SVHS to send proof of your course completion directly to your school, complete this form.

Restricted Not available unless:
- You achieve a required score in **Course total**
- You achieve a required score in **Final Exam**

Certificate of Completion

Restricted Not available unless:
- You achieve a required score in **Course total**
- You achieve a required score in **Final Exam**