bhanzu Learning Center

Algebra I

Road To College



Algebra I at Bhanzu builds the algebraic foundation students need for high school mathematics, connecting linear, quadratic, and exponential functions.
Students build core algebraic fluency: equations, inequalities, systems, functions, and graphing, then extend into polynomials, sequences, quadratics, and complex numbers, closing with statistics, probability and applied modelling. The course deepens problem-solving, reasoning, and mathematical confidence, and layers in higher algebra, including Vieta's Formulas, complex numbers, and combinatorics, that forms a strong foundation for Algebra II.

Polynomials, Exponents & Sequences

- Radical & Rational Expressions
- Polynomial Operations & Identities
- Factoring Polynomials
- Remainder & Factor Theorem
- Arithmetic Sequences
- Geometric Sequences
- Literal Equations & Function Evaluation
- Problem Solving

Quadratics & Algebra II Foundations

- Quadratic Functions
- Vertex Form & Completing The Square
- Quadratic Formula & Discriminant
- Vieta's Formulas
- Quadratic Inequalities
- Intro To Complex Numbers
- Complex Roots
- Problem Solving

Probability, Statistics & Modelling

- Combinatorics & Binomial Theorem
- Scatter Plots & Correlation
- Linear Regression
- Two-Way Frequency Tables
- Statistical Modelling
- Linear, Quadratic & Exponential Models
- Conditional Probability & Compound Events
- Problem Solving

This Module Will Be Conducted Post **Summer Break**

Foundations, Logic & Transformations

- Logical Reasoning & Proof Structure
- Points, Lines, Angles & Postulates
- Geometric Constructions
- Theorems: Lines And Angles
- Coordinate Geometry & Proofs
- Rigid Transformations
- Dilations & Similarity Transformations
- Problem Solving

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Geometry

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Geometry at Bhanzu builds the spatial reasoning and logical rigour that sits at the heart of all advanced mathematics, connecting logical reasoning, coordinate methods, and transformations.
Students begin with the language of geometry: definitions, postulates, and proof, before moving through transformations, congruence, and similarity. The course connects algebra and geometry throughout, using coordinates to prove geometric relationships and deriving results from first principles. Students extend their knowledge into circles, polygons, and three-dimensional figures, closing with probability and geometric modelling.

Congruence, Similarity & Trigonometry

- Theorems: Triangles
- Theorems: Quadrilaterals I
- Theorems: Quadrilaterals II
- Triangle Congruence Proofs
- Similar Triangles
- Pythagoras Theorem & Inverse
- Intro To Trigonometry
- Problem Solving

Circles, Polygons & Concurrency

- Circles & Its Parts
- Circle Theorems I
- Circle Theorems II
- Equation Of A Circle
- Circle Constructions
- Concurrency
- Circle Conjectures
- Problem Solving

2D & 3D Geometry

- Perimeter & Area: Regular Polygons
- Cross-Sections & Rotations Of 3D Figures
- Surface Area
- Volume & Cavalieri's Principle
- Volume Of Spheres
- Combinatorics & Area Probability
- Independence & Conditional Probability
- Problem Solving

This Module Will Be Conducted Post **Summer Break**

Functions, Inverses & Systems

- Intro To Function
- Types Of Functions
- Function Operations & Composition
- Inverse Functions
- Linear-Quadratic Systems
- Systems Of Linear Inequalities
- Systems Of Three Linear Equations
- Problem Solving

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Algebra II

Road To College



Algebra II at Bhanzu builds on Algebra I foundations and takes students through the deepest algebra before calculus.
The course is designed to connect every major function family: polynomial, radical, exponential, logarithmic, and rational. Students build fluency with functions, inverses, and systems of equations, then extend into polynomials, complex numbers, and sequences and series, closing with data modelling and probability. The course layers in higher algebra, including Vieta's Formulas, the Binomial Theorem, and classical problem-solving methods.

Special Functions & Transformations

- Absolute Value Functions
- Square Root Functions
- Cubic & Cube Root Functions
- Rational Functions & Asymptotes
- Exponential Functions
- Logarithmic Functions
- Speed Math
- Problem Solving

Polynomials & Complex Numbers

- Laws Of Exponents & Radical Expressions
- Polynomial Operations
- Factoring Polynomials
- Vieta's Formulas, Remainder & Factor Theorem
- Intro To Complex Numbers
- Complex Numbers In Polynomial Identities
- Quadratic Equations & Parabola
- Problem Solving

Statistics, Probability & Modelling

- Sequences & Series
- Binomial Theorem
- Induction
- Combinatorics
- Statistical Models
- Conditional Probability
- Compound Events
- Problem Solving

This Module Will Be Conducted Post **Summer Break**

Functions & Algebraic Reasoning

- Functions Deep Dive
- End Behaviour & Function Types
- Discontinuities & Rational Function Behaviour
- Function Composition & Transformations
- Inverse Functions
- Graphing Exponential Functions
- Graphing Logarithmic Functions
- Problem Solving

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Precalculus

Road To College



Precalculus at Bhanzu completes the bridge from algebra to calculus, building the function fluency, trigonometric depth, and geometric reasoning that advanced mathematics demands.
Students explore discontinuities, end behaviour, and inverses across all major function families before moving to trigonometry: identities & equations. The course extends into conics, parametric equations, polar coordinates, and complex numbers in exponential form, closing with vectors, matrices, and three-dimensional geometry. Topics like De Moivre's Theorem, vector projections, and 3D coordinate methods ensure students arrive at calculus with both the depth and the confidence the subject demands.

Trigonometric Functions & Identities

- Unit Circle
- Graphs Of Trigonometric Functions
- Inverse Trigonometric Functions
- Trigonometric Identities
- Angle Addition, Double & Half Angle Formulas
- Trigonometric Equations
- Law Of Sines & Law Of Cosines
- Problem Solving

Conics, Polar & Complex Numbers

- Conic Sections
- Ellipses & Hyperbolas
- Parametric Equation
- Polar Coordinates & Graphing
- Complex Numbers In Polar Form
- Exponential Form & De Moivre's Theorem
- Roots Of Unity & Complex Number Geometry
- Problem Solving

Vectors, Matrices & 3D Geometry

- Vectors In 2D
- Dot Product & Projections
- Matrices: Operations, Inverses
- Determinants
- Matrices Transformations
- 3D Coordinates & Vectors
- Cross Product & Planes
- Problem Solving

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