Think Academy

AMC 12 Term B Syllabus

	Topic	Learning Goals
1	**Functions and Graph Transformations**	Understand basic function representations and common graph transformations; handle introductory domain, range, and graph-reading problems.
2	**Composite and Inverse Functions**	Understand the basic relationship between composite and inverse functions; perform common compositions, find inverses, and determine domains.
3	**Polynomial Roots and Vieta's Formulas**	Use common methods for handling polynomial roots, including factoring and Vieta's formulas, in basic root-relation problems.
4	**Polynomial and Rational Inequalities**	Identify critical values and restrictions, and use sign analysis to solve common polynomial, rational, and absolute value inequalities.
5	**Rational Functions**	Understand the main graph features of rational functions and identify holes, asymptotes, and basic range or parameter behavior.
6	**Radicals and Rational Exponents**	Apply the basic rules and restrictions for radicals and rational exponents, and solve common radical equations while checking for extraneous solutions.
7	**Exponential and Logarithmic Equations**	Use core exponential and logarithmic properties to solve common equations and inequalities while respecting domain restrictions.
8	**Sequences, Recurrence, and the Binomial Theorem**	Use common formulas and structures from sequences and the binomial theorem to handle basic sums, recurrences, and coefficient problems.
9	**Radians and the Unit Circle**	Build a unit-circle perspective and use it for degree-radian conversion, exact standard-angle values, and basic arc-length or sector-area problems.
10	**Graphs of Trigonometric Functions**	Understand the key parameters and transformations of trigonometric graphs; read and sketch graphs and handle simple parameter questions.
11	**Trigonometric Identities**	Recognize common trigonometric identities and choose appropriate formulas for basic simplification and exact-value problems.
12	**Double-Angle, Half-Angle, and Trig Combination**	Apply double-angle, half-angle, and basic trig-combination methods to common simplification, exact-value, and extrema problems.
13	**Trigonometric Equations and Inverse Trigonometric Functions**	Solve common trigonometric equations on specified intervals and use the principal-value ranges of inverse trigonometric functions correctly.
14	**Applications of the Law of Sines and Law of Cosines**	Select suitable tools from side-angle information to solve triangle problems and recognize common multiple-solution cases.
15	**Polar Form of Complex Numbers**	Understand both algebraic and geometric representations of complex numbers, and convert between rectangular and polar forms for basic multiplication/division problems.
16	**De Moivre's Theorem and Roots of Unity**	Use polar form and De Moivre's theorem to handle basic problems involving powers, complex roots, and roots of unity.
17	**Conic Sections and Vector Basics**	Recognize common conic sections and their key parameters, and use basic vector operations in simple coordinate-geometry problems.
18	**Comprehensive Review**	Combine topics from across the course to solve AMC 12 foundation and mid-level problems while reducing common calculation and condition-checking errors.