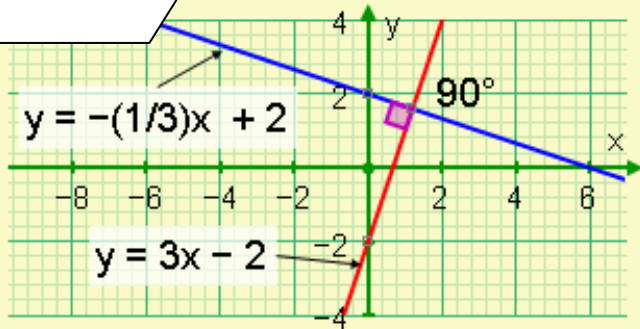


Autograph version 3

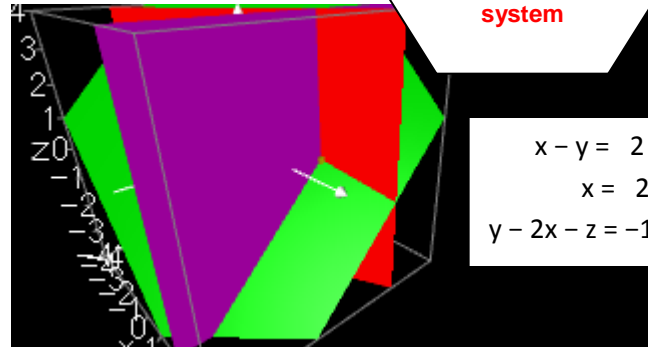
and High School ALGEBRA courses

Autograph is spectacular dynamic software from the UK that allows teachers to visualise many of the mathematical topics that occur in Pre-ALGEBRA, ALGEBRA I and ALGEBRA II courses.

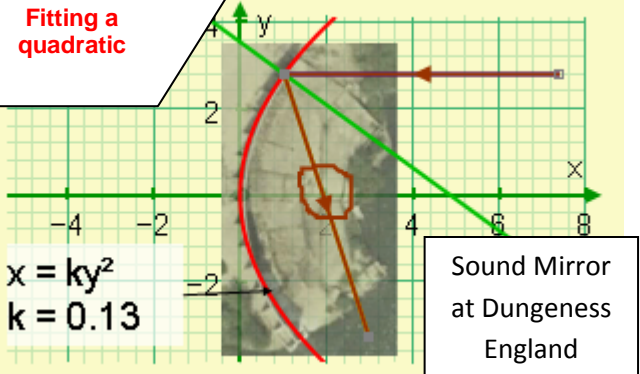
**Straight line +
Perpendicular**



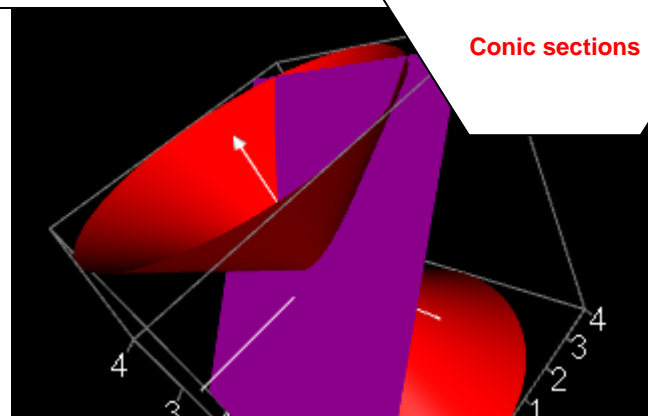
**3-variable
system**



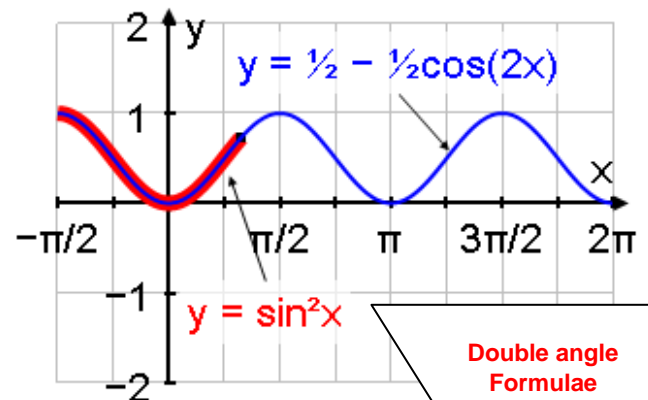
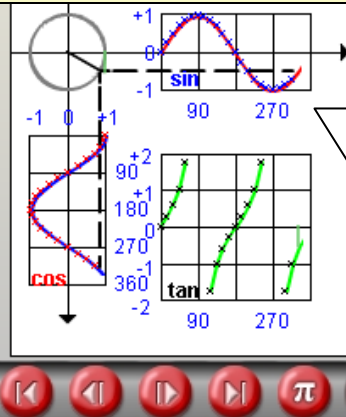
**Fitting a
quadratic**



Conic sections



**Trig and the
Unit Circle**



**Double angle
Formulae**



THE LEARNING TEAM

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USA: Topic Outline for High School ALBEGRA courses with references to Autograph



AUTOGRAPH PAGE

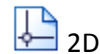
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PRE ALGEBRA

Add, subtract, multiply, divide rational numbers
Solve one and two step equations and inequalities + rational numbers.

Solve problems involving proportions, percents, graphs, area, volume.
Basic Equations

**Basic Graphing: The coordinate plane and points.
Graph equations and inequalities. The Straight Line**



Fractions; Lowest Common Mult. (LCM); Greatest Common Fac. (GCF)
Multiplying fractions; Dividing fractions; Common denominators

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ALGEBRA I

Exponents; Single Variable Equations
Simple and complex equations; Equations consisting of fractions

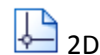
Quadratic equations; Multi-Variable Equations
Word Problems; Factoring; Greatest Common Factor (GCF)

Process of factoring; Factoring trinomials;
Fractions; Multiplication of fractions; Lowest Common Multiple (LCM)

Addition of fractions; Complex fractions
Ratios; Proportions; Advanced operations involving ratios

Graphing on Number Lines; Inequalities; Conjunctions; Domain

**Graphing on a Coordinate Plane
Graphing points
Graphing straight lines**



Square Roots; Simplification of roots

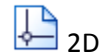
Addition and Subtraction of roots and complex expressions
Multiplication of roots; Scientific Notation

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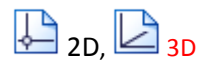
ALGEBRA II

Solving Equations and Inequalities;

Graphs and Functions: Graphing points and straight lines
Slope of a line; $y = mx + b$; Parallel and perpendicular lines



Systems of Equations and Inequalities
3-variable systems of equations



Polynomials and Factoring; Multiplication of polynomials;
 Factoring by grouping; Sums and differences of cubes
 Fractional expressions and equations; Variation (direct and indirect)

Powers and Roots; Square roots; Cube roots; n-th roots
 Rationalizing the denominator; Roots, exponents; Radical equations

Complex Numbers: Equations with complex numbers
Graphing complex numbers



Quadratic Equations: Solving quadratic equations
 Quadratic formula; Quadratic form; **Quadratic Functions**



Symmetry; Properties of even and odd functions
Transformations: Stretching/shrinking; Parabolas: x-intercepts



Coordinate Geometry: Distance and midpoint formulas
Conic sections (circles, ellipses, hyperbolas, parabolas)
Exponential and Logarithmic Functions; Inverse functions



Probability; Sigma notation; Permutations; Combinations
 Matrices: Addition and subtraction; Multiplication

Trigonometry: Ratios (sin, cos, tan); Reciprocal ratios (csc, sec, cot)
Rotations (unit circle); Radians; Graphs of trig. ratios
Trigonometric Identities; Double angle identities;
 Pythagorean and quotient identities; Inverse trig. ratios;
 Trigonometric equations; Cofunctions; Law of sines; Law of cosines



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Oundle, May 2009