

Villa Maria Academy
Mathematics Department
Topics for Algebra 2 Placement Test

Real numbers and number operations

Linear Equations and Functions

- **Solving and graphing:** linear equations and inequalities, absolute value equations and inequalities, systems of linear equations and inequalities (2 and 3 variables)

Quadratic equations and Functions

- Solving and graphing: factoring, quadratic formula, discriminant, inequalities

Complex Numbers

- Operations, graphing, standard form

Graphing in the x-y-z coordinate system

Piecewise Functions

- Graphing, evaluating

Matrices

- Operations, determinants, Cramer's Rule, identity, inverses, solving matrix equations, solving systems of equations

Polynomials

- Properties of exponents, operations, factoring and solving (including trinomials, sum/difference of 2 cubes, by grouping, quadratic form)

Rational Exponents and nth Roots

Function Operations

- Operations, composition, domain
- Inverses

Solving Radical Equations

Exponential Functions

- Graphing, growth vs. decay, end behavior, natural exponential base, solving basic exponential equations

Logarithmic Functions

- Logarithmic form and exponential form, common log, natural log, solving basic logarithmic equations

Rational Functions and Equations

- Operations, simplify, solve

Conic Sections

- Graphing, writing equations of and classifying: parabolas, circles, ellipses, hyperbolas

Sequences and Series

- Using and writing a finite or infinite sequence
- Sigma notation
- Arithmetic and geometric sequences and series

Statistics

- Measures of central tendency/ measures of dispersion
- Best fit curves (linear and quadratic)

Direct, Inverse and Joint Variation

Modeling

- Writing and simplifying a model
- Solving word problems