



Waukegan Community Unit  
School District #60  
Lincoln Center for Educational Services  
Division of Teaching, Learning, and Professional Practices

## **The Core Principals: Standards for Mathematical Practice Model Advanced Pathway: Precalculus Overview**

The goal of the Standards for Mathematical Practice is to complement the Common Core State Standards by working to engage students in the subject matter, ensuring that they grow in maturity and expertise from Pre-Kindergarten through High School.

### **Number and Quantity**

- The Complex Number System
  - Perform arithmetic operations with complex numbers
  - Represent complex numbers and their operations on the complex plane
  - Use complex numbers in polynomial identities and equations
- Vector and Matrix Quantities
  - Represent and model with vector quantities
  - Perform operations on vectors
  - Perform operations on matrices and use matrices in applications

### **Algebra**

- Arithmetic with Polynomials and Rational Expressions
  - Use polynomial identities to solve problems
  - Rewrite rational expressions
- Reasoning with Equations and Inequalities
  - Solve systems of equations

### **Functions**

- Interpreting Functions
  - Analyze functions using different representations
- Building Functions
  - Build a function that models a relationship between two quantities
  - Build new functions from existing functions
- Trigonometric Functions
  - Extend the domain of trigonometric functions using the unit circle
  - Model periodic phenomena with trigonometric functions
  - Prove and apply trigonometric identities

### **Geometry**

- Similarity, Right Triangles, and Trigonometry
  - Apply trigonometry to general triangles
- Circles
  - Understand and apply theorems about circles

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## Geometry Continued

- Expressing Geometric Properties with Equations
  - Translate between the geometric description and the equation for a conic section
- Geometric Measurement and Dimension
  - Explain volume formulas and use them to solve problems
  - Visualize relationships between two-dimensional and three-dimensional objects

<b>Standards for Mathematical Practice</b>
<ol style="list-style-type: none"><li>1. Make sense of problems and persevere in solving them</li><li>2. Reason abstractly and quantitatively</li><li>3. Construct viable arguments and critique the reasoning of others</li><li>4. Model with mathematics</li><li>5. Use appropriate tools strategically</li><li>6. Attend to precision</li><li>7. Look for and make use of structure</li><li>8. Look for an express regularity in repeated reasoning</li></ol>