St. Francis
CATHOLIC HIGH SCHOOL

Requirements for Waiving Algebra 1 and Geometry for Placement in Algebra 2

All members of the Class of 2020 who wish to take Algebra 2 in Fall 2016 must first pass a combined Algebra I/Geometry curriculum test.

Test Date: March 12, 2016
Time: 9:00 AM to 10:30 AM
Test Format: multiple choice

Calculators are allowed.

Test Content:

Grade 8 – Algebra I Overview from Common Core

- Identify and use the arithmetic properties for real numbers.
- Understand and use operations such as taking the opposite, finding the reciprocal, taking a root, raising to a fractional power, and use the rules of exponents.
- Solve linear equations and inequalities, absolute value equations, quadratic equations by factoring, and multistep problems including word problems.
- Graph linear equations using x- and y- intercepts and slope-intercept form.
  --Also sketch the region defined by a linear inequality.
- Derive linear equations by using the point-slope formula and manipulate to standard or slope-intercept form.
- Understand the concepts of parallel lines and perpendicular lines and how those slopes are related.
  --Find the equation of line parallel or perpendicular to a given line through a given point.
- Solve a system of two linear equations algebraically and graphically.
  --Also solve a system of two linear inequalities and sketch the solution.
- Apply basic factoring techniques (greatest common factor, difference of squares, perfect square binomials) to second and simple third degree polynomials
- Simplify polynomials expressions by adding, subtracting, multiplying, or dividing.
  --Solve multistep problems, including word problems involving rate and percent-mixture.
- Understand the concepts of a relation and a function and determine whether a relation is a function.
  --Identify the domain and range of a function.
- Use and know simple aspects of a logical argument.
- Use counterexamples to show that an assertion is false.
- Solve quadratic equations by factoring, the quadratic formula, or completing the square.
  -- Apply algebraic techniques to solve problems involving work and force of gravity.

- Graph quadratic functions and know that their roots are x-intercepts.
- Simplify rational expressions by adding, subtracting, multiplying, or dividing.
  --Solve multistep problems, including word problems.
- Solve radical and rational equations and determine the validity of extraneous solutions.

<u>Geometry content from Common Core Mathematics Standards for High School</u>

- **Constructions**
  --Perform basic constructions with a straightedge and compass, such as angle bisectors, perpendicular bisectors, and the line parallel to a given line through a point off the line
- **Congruence**
  --Experiment with transformations in the plane
  --Understand congruence in terms of rigid motions
  --Prove geometric theorems
  --Make geometric constructions
- **Similarity, Right Triangles, and Trigonometry**
  --Understand similarity in terms of similarity transformations
  --Prove theorems involving similarity
  --Define trigonometric ratios and solve problems involving right triangles
  --Apply trigonometry to general triangles
- **Circles**
  --Understand and apply theorems about circles
  --Find arc lengths and areas of sectors of circles
- **Expressing Geometric Properties with Equations**
  --Translate between the geometric description and the equation for a conic section
  --Use coordinates to prove simple geometric theorems algebraically
- **Modeling with Geometry**
  --Apply geometric concepts in modeling situations

These content standards are not being tested but it is assumed all students approved for placement in Algebra 2 will be competent in these standards not being tested by the time they enter St. Francis High School in the fall of 2014.

- **Geometric Measurement and Dimension**
  --Explain volume formulas and use them to solve problems
  --Visualize relationships between two-dimensional and three-dimensional objects

Passing Requirements: Based on their combined Algebra 1/Geometry curriculum test scores, students will be placed in one of the following classes: Honors Algebra 2, Algebra 2, or Geometry.