

# **MATH HONORS 2: First Semester Exam Skills**

## **Algebra**

- Classifying numbers according to the number sets
- Expressing sets of numbers using correct notation
- Using properties of real numbers
- Evaluating expressions using the order of operations
- Solving equations, literal equations, and inequalities
- Solving absolute value equations and inequalities
- Graphing solutions to compound inequalities on a number line
- Expressing lines as linear equations in slope-intercept, standard, and point-slope forms
- Graphing lines, and using parallel and perpendicular lines to find slopes

## **Functions**

- Determining when a relation is a function
- Stating the domain and the range of a function
- Evaluating, adding, subtracting, multiplying, and dividing functions
- Finding a composition of functions
- Finding the inverse of a function
- Determining when the inverse of a relation is a function
- Graphing piecewise, step, and absolute-value functions
- Graphing functions after translations, reflections, and size changes

## **Systems**

- Classifying systems as inconsistent, consistent/independent, or consistent/dependent
- Solving systems of equations by graphing, substitution, and elimination

## **Quadratics**

- Using factoring to solve quadratic equations and to find zeros ( $x$ -intercepts)
- Completing the square to solve quadratic equations and to find the vertex
- Solving quadratic equations using the quadratic formula
- Finding the  $y$ -intercept and axis of symmetry, and describing the opening
- Graphing quadratic functions by finding the intercepts and the vertex
- Using the discriminant to determine the number of roots or zeros
- Adding, subtracting, multiplying, and dividing complex numbers
- Graphing complex numbers and their conjugates
- Solving quadratic inequalities

## **Polynomials**

- Identifying and classifying polynomials
- Evaluating, adding, subtracting, multiplying, dividing, and simplifying polynomials
- Factoring and solving polynomial equations using the Rational Root Theorem, the Factor Theorem, and the Complex Conjugate Root Theorem
- Describing important characteristics and general shape of polynomial functions
- Locating coordinates of maxima and minima in a graph of a polynomial function
- Determining intervals over which a polynomial function is increasing and decreasing
- Writing polynomial functions given sufficient information about its zeros

## **Rationals**

- Solving problems using direct, joint, inverse, and combined variation
- Graphing rational functions by finding intercepts, holes, and asymptotes
- Writing rational functions given its intercepts, holes, and asymptotes
- Multiplying, dividing, adding, subtracting, and simplifying rational expressions
- Solving rational equations and inequalities