

## Final Exam Study guide

Use the rules of exponents to simplify exponential expressions.

Convert numbers from standard form to scientific notation and vice versa.

Use the Distributive Property to factor out monomial factors.

Factor quadratic trinomial.

Simplify complex fraction.

Find products of binomials (polynomials and radical expressions) involving conjugate patterns.

Solve equations involving parentheses, fractions and the variable in more than one terms.

Add, subtract, multiply and divide polynomials.

Rewrite square root of negative numbers using  $i$ .

Solving absolute value equations.

Solving equations with none, one and infinitely many solutions.

Solving a linear equation with several occurrences of the variable

Graphing a linear inequality on the number line.

Solving word problem involving linear equations (including mixture problem).

Solve rational equations involving monomial and binomial factors in the variable in the denominator.

Solve equations involving radical expressions.

Identifying functions from ordered pairs, equations and graphs – vertical line test.

Express domain and range of discrete and continuous functions using interval notation.

Evaluation polynomial and rational expressions at a given value of the variable.

Graphing equation of a straight line.

Finding the slope and intercept of the equation of a straight line.

Writing the equation of a straight line and/or secant line given the slope and a point or two points.

Finding and interpreting inputs and outputs in functions written using functional notation.

Variable expressions as inputs of functions

Finding and interpreting the slope and initial value in a real world problem modeled by a straight line.

Finding the average rate of change from equation and the graph and from a word problem.

Identify the solution of a system of equations.

Solving a system of equations by graphing, substitution and elimination.

Determine whether a system is consistent or inconsistent and whether the equations are independent or dependent.

Solving word problems involving a system of equations (mixtures, distance and tax rate).

Graph absolute value and polynomial equations using the vertical and horizontal shifting, reflection over an axis and vertical stretching/compression.

Determine symmetry with respect to the  $x$ -axis,  $y$ -axis and the origin.

Evaluating and graphing a piecewise function at various values of the domain.

Finding a difference quotient for a linear or quadratic function

Finding where a function is increasing, decreasing, or constant given the graph (Interval Notation)

Finding local and absolute extrema (Max/Min).

Determine whether functions are Odd or Even.

Find the sum, difference, product, quotient and composition of 2 functions.

Determine whether two functions are inverses of each other (discrete, linear, and rational).

Finding, evaluating, and interpreting an inverse function for a given linear relationship.

Solving Quadratic Equations (exact and approximate answers).

Solving word problems modelled by Quadratic Functions (use of Max/Min).

Use the graphing calculator to find zeros, intercepts and max/min of Quadratic Functions.

Writing Quadratic function both in general and standard forms.

Writing the equation of a quadratic function given its graph

Identify polynomial functions.

Finding zeros and their multiplicities given polynomials is factored form.

Finding a polynomial function given its zeros.

Determine end behavior of polynomial function.

Dividing a polynomial by a monomial or binomial.

Use of synthetic division and the factor theorem in polynomial division.

Use graphing calculator to find extrema and solve word problems involving polynomial functions.

Finding the intercepts, asymptotes, domain, and range from the graph of a rational function

Graphing a rational function with one or two vertical asymptotes.

Graph exponential and log functions using shifting, stretching and reflecting transformations.

Solve application problems modelled by exponential (growth and decay) and log functions.

Convert between exponential and log forms.

Finding the final amount in compound interest problems.

Use properties of logs to expand and combine log expressions.

Solve exponential and log equations.

Finding the initial and final amount in exponential growth/decay problems.

Finding half-life in exponential decay problems.

Finding time to double/triple in exponential growth problems.

Using a graphing calculator to solve a word problem involving exponential and log equations.