

MATH M05: College Algebra

Course Objectives (COR)

- State and apply the definition of a function and use the Vertical Line Test.
- Evaluate functions at both numerical and algebraic domain values.
- Determine the domain and range of a relation or function given its equation or its graph.
- Form a new function from original functions using the functional operations of addition, subtraction, multiplication, division, and composition.
- Use the Horizontal Line Test and the definition of an inverse function to determine whether a pair of functions are inverses.
- Graph the functions which yield the parabola, the absolute value, the cubic, the square root, the cube root, and ones defined piecewise; solve linear and radical equations, and absolute value equalities and inequalities.
- Test equations of graphs for symmetries about the x-axis, the y-axis, and the origin.
- Graph a function whose equation yields a translation and/or reflection of a known graph.
- Graph a parabola given by a quadratic function and determine the center and radius of a circle from its equation.
- Give a rough sketch of the graph of a polynomial function of degree three or larger given its factored form.
- Determine the domain and range as well as the horizontal and vertical asymptotes of a rational function, and use that information to graph it; also be able to solve rational equations.
- Graph exponential and logarithmic functions.
- Convert equations back and forth from exponential to logarithmic form.
- Apply the rules of logarithms involving logarithms of products, quotients, powers, and change of base and solve logarithmic functions.
- Solve exponential equations which do have the same base on both sides and ones that do not have the same base on both sides of the equation by using logarithms.
- Use the following theorems (over the complex numbers): Remainder, Factor, Fundamental Theorem of Algebra, Rational Roots (with synthetic division), and Conjugate Roots to solve polynomial equations.
- Solve systems of linear equations using substitution and addition (elimination) with two and three variables and determine consistency and dependency as germane.
- Solve systems of nonlinear equations and linear and non-linear systems of inequalities.

Course Learning Outcomes (CLO)

- Students completing Math M05 will be able to successfully evaluate functions, equations, and inequalities related to higher level concepts in preparation for Calculus.