

## College Algebra Essential Outcomes and Learning Targets

The primary purpose of this course is to develop a sound knowledge of equations, functions, polynomials, and systems.

4	3	2	1	0
Student has completely <b>performed the learning targets</b> without error.	Student has completely <b>performed the learning targets</b> with minor errors.	Student has <b>performed the learning targets</b> but with major errors	Student has not demonstrated how to <b>perform the given learning targets</b> but made an attempt.	No attempt nor direction on possible solution.

A student who successfully completes this course will be able to:

1. Demonstrate mastery in solving equations and inequalities:
  - a. Involving linear and rational expressions.
  - b. Involving quadratic and higher degree polynomials.
  - c. Involving radicals and absolute value.
  - d. Involving complex numbers.
  - e. Defining circles algebraically.
  - f. Within applied problems.
2. Transform functions by:
  - a. Analyzing linear functions.
  - b. Defining functions.
  - c. Determining the Domain and Ranges of functions.
  - d. Analyzing the difference quotient.
  - e. Analyzing graphs of functions.
  - f. Understand behavior of Parent Functions.
  - g. Using shifts and translations of basic functions and their graphs.
  - h. Performing operations on functions including compositions.
  - i. Derive and test Inverse Functions.
3. Analyze the zeros of a polynomial function by:
  - a. Converting a quadratic function into standard form.
  - b. Finding minimums and maximums of functions.
  - c. Determine the end behavior of graphs.
  - d. Utilize the intermediate value theorem to approximate real zeros.
  - e. Applying long division and synthetic division.
  - f. Using the Rational Zero and other polynomial theorems.
4. Graph Rational Functions by:
  - a. Analyzing the functions domain and range.
  - b. Determine lines of Asymptotes.
  - c. Zeros of the polynomial.
  - d. Understanding end behavior of the function.

5. Analyze conic sections by:
  - a. Recognizing, graphing, and writing equations of conic sections.
  - b. Translate graphs of conic sections.
  - c. Derive the standard form for the conic sections.
  - d. Understand the applications of conic sections.
  
6. Demonstrate mastery in solving exponential and logarithmic equations by:
  - a. Applying the definition of an Exponential Functions.
  - b. Defining logarithmic functions.
  - c. Solving compound and continuous interest functions.
  - d. Applying the definition of a Logarithmic Functions.
  - e. Use the Properties of Logarithms to find solutions.
  - f. Solve Exponential and Logarithmic Equations and Applications
  
7. Solve Linear and Nonlinear systems of equations and inequalities by:
  - a. Using method of substitution.
  - b. Using method of elimination.
  - c. Using method of graphing.
  - d. Using method of determinants.
  - e. Modelling real-life problems involving systems.
  - f. Applying back-substitution or Gaussian elimination to multivariable systems.
  - g. Decompose partial fractions of rational expressions