

College Algebra Placement Test Study Guide

The student may use any calculator he or she wishes but may not use a computer. (The student must furnish the calculator.)

The time limit for the test is three hours. The test consists of 26 questions. About half the points come from 17 multiple-choice problems, while the other half come from 9 open-ended and graphing problems.

The problems on the test are of average difficulty. They are at the level of difficulty generally found in the regular exercises in any College Algebra textbook.

The current course textbook is College Algebra: A Graphing Approach, 3rd Edition; Larson, Hostetler, and Edwards; however, any College Algebra textbook should provide sufficient information.

To pass this placement test, a student should have a working knowledge of the following topical areas:

Functions:

The student should be able to:

- Apply the definition of a function.
- Perform operations on a function (add, subtract, multiply, divide).
- Evaluate a composite function.
- Determine the domain and the range of a function.
- Find the inverse of a function or indicate there is no inverse.
- Graph a function.
- Determine the zeros of a polynomial function (number, type, value).
- Distinguish between odd and even functions.
- Translate a function on a graph and then determine the corresponding change in the equation of the function.
- Recognize the graphs of elementary families of functions (linear, square root, greatest integer, absolute value, quadratic, cubic, rational exponential, logarithmic).

Logarithms:

The student should be able to:

- Translate back and forth between a logarithmic equation and the corresponding exponential equation.
- Define and use common and natural logarithms.
- Graph exponential and logarithmic functions.
- Use the properties of logarithms to simplify expressions.
- Use the properties of logarithms to solve logarithmic equations and basic exponential equations.

Graphs:

The student should be able to:

- Write the equation of a parabola, circle, hyperbola, or ellipse based on its graph.
- Graph a parabola, circle, hyperbola, or ellipse based on its equation.
- Graph absolute value, exponential, logarithmic, or rational functions.
- Graph the solution of a system of inequalities (linear and non-linear), identifying the coordinates of the vertices.

General:

Besides the topics specifically listed above, the placement test assumes that the student has acquired knowledge of the fundamental concepts of algebra. The student should be able to:

- Solve equations and inequalities.
- Apply the properties of exponents.
- Simplify radicals.
- Simplify algebraic expressions.
- Work with complex numbers.