

# CLEP® College Algebra: At a Glance

## Description of the Examination

The College Algebra examination covers material that is usually taught in a one-semester college course in algebra. Nearly half of the test is made up of routine problems requiring basic algebraic skills; the remainder involves solving nonroutine problems in which candidates must demonstrate their understanding of concepts. The test includes questions on basic algebraic operations; linear and quadratic equations, inequalities, and graphs; algebraic, exponential and logarithmic functions; and miscellaneous other topics. It is assumed that candidates are familiar with currently taught algebraic vocabulary, symbols and notation. The test places little emphasis on arithmetic calculations. However, an online scientific calculator (nongraphing) will be available during the examination.

The examination contains approximately 60 questions to be answered in 90 minutes. Some of these are pretest questions that will not be scored.

## Knowledge and Skills Required

Questions on the College Algebra examination require candidates to demonstrate the following abilities in the approximate proportions indicated.

- Solving routine, straightforward problems (about 50 percent of the examination)
- Solving nonroutine problems requiring an understanding of concepts and the application of skills and concepts (about 50 percent of the examination)

The subject matter of the College Algebra examination is drawn from the following topics. The percentages next to the main topics indicate the approximate percentage of exam questions on that topic.

### 25% Algebraic Operations

Factoring and expanding polynomials

Operations with algebraic expressions

Operations with exponents

Properties of logarithms

### 25% Equations and Inequalities

Linear equations and inequalities

Quadratic equations and inequalities

Absolute value equations and inequalities

Systems of equations and inequalities

Exponential and logarithmic equations

### 30% Functions and Their Properties\*

Definition and interpretation

Representation/modeling (graphical, numerical, symbolic and verbal representations of functions)

Domain and range

Algebra of functions

Graphs and their properties (including intercepts, symmetry and transformations)

Inverse functions

### 20% Number Systems and Operations

Real numbers

Complex numbers

Sequences and series

Factorials and Binomial Theorem

Determinants of 2-by-2 matrices

\*Each test may contain a variety of functions, including linear, polynomial (degree  $\leq 5$ ), rational, absolute value, power, exponential, logarithmic and piecewise defined.

## Study Resources

Most textbooks used in college-level algebra courses cover the topics in the outline above, but the approaches to certain topics and the emphases given to them may differ. To prepare for the College Algebra exam, it is advisable to study one or more college textbooks, which can be found in most college bookstores.

A recent survey conducted by CLEP® found that the following textbooks are among those used by college faculty who teach the equivalent course. Most of these have companion websites with practice test questions and other study resources. HINT: When selecting a textbook, check the table of contents against the Knowledge and Skills Required for this test.

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Aufmann et al., <i>Algebra: Introductory and Intermediate</i> (Cengage)
Huettnermueller, <i>College Algebra Demystified</i> (McGraw-Hill)
Barnett et al., <i>College Algebra</i> (McGraw-Hill)
Barnett et al., <i>College Algebra: Graphs and Models</i> (McGraw-Hill)
Beecher, Penna and Bittinger, <i>College Algebra</i> (Addison-Wesley)
Blitzer, <i>College Algebra Essentials</i> (Prentice Hall)
Dugopolski, <i>College Algebra and Trigonometry</i> (Addison-Wesley)
Gustafson and Frisk, <i>College Algebra: Essentials</i> (Brooks/Cole)
Stewart et al., <i>College Algebra</i> (Brooks/Cole)
Larson and Hostetler, <i>College Algebra</i> (Brooks/Cole)
Lial et al., <i>College Algebra</i> (Addison-Wesley)
Ratti and McWaters, <i>College Algebra</i> (Addison-Wesley)
Sullivan, <i>College Algebra Essentials</i> (Prentice Hall)
Young, <i>College Algebra</i> (Wiley)
Rockswold, <i>College Algebra Through Modeling and Visualization</i> (Addison-Wesley)

In addition, the following resources, compiled by the CLEP test development committee and staff members, may help you study for your exam. However, none of these sources are designed specifically to provide preparation for a CLEP exam. The College Board has no control over their content and cannot vouch for accuracy.

[http://www.wtamu.edu/academic/anns/mps/math/mathlab/col\\_algebra/index.htm](http://www.wtamu.edu/academic/anns/mps/math/mathlab/col_algebra/index.htm)  
(West Texas A&M Virtual Math lab—College Algebra)

<http://www.math.armstrong.edu/MathTutorial>  
(Armstrong State College Algebra Tutorial)

<http://www.libraryofmath.com/college-algebra.html>  
(Library of Math)

<http://ocw.usu.edu/mathematics-and-statistics/college-algebra/syllabus.html>  
(Utah State Open Courseware College Algebra course)

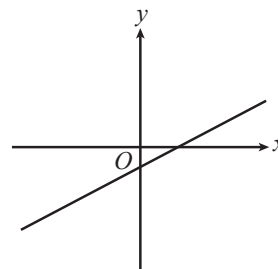
Visit [www.collegeboard.com/clepprep](http://www.collegeboard.com/clepprep) for additional algebra resources. You can also find suggestions for exam preparation in Chapter IV of the *CLEP Official Study Guide*. In addition, many college faculty post their course materials on their schools' websites.

## Sample Test Questions

The following sample questions do not appear on an actual CLEP examination. They are intended to give potential test-takers an indication of the format and difficulty level of the examination and to provide content for practice and review. For more sample questions and information about the test, see the *CLEP Official Study Guide*.

1. Which of the following is equal to  $a^{bc}$  for all values of  $a$ ,  $b$ , and  $c$ ?

- (A)  $ab^c$
- (B)  $a^{(b+c)}$
- (C)  $a^b a^c$
- (D)  $(a^b)^c$
- (E)  $a^b c$



2. If  $a > 0$  and  $b > 0$ , which of the following could be an equation of the line graphed in the  $xy$ -plane above?

- (A)  $y = -ax - b$
- (B)  $y = ax - b$
- (C)  $y = ax + b$
- (D)  $y = -ax + b$
- (E)  $y = abx$

$$f(x) = x + 3$$

$$g(x) = |x - 3|$$

3. The functions  $f$  and  $g$  are defined above. What is the value of  $f(g(-3))$ ?

- (A)  $-6$
- (B)  $-3$
- (C)  $0$
- (D)  $3$
- (E)  $9$

4. In the  $xy$ -plane, the graph of the function  $f(x) = x^2 + bx + 4$  does not intersect the  $x$ -axis. Which of the following must be true about  $b$ ?

- (A)  $-8 \leq b < -4$
- (B)  $b = -4$
- (C)  $-4 < b < 4$
- (D)  $b = 4$
- (E)  $4 < b \leq 8$

Type your answer to the following question in the box below.

5. If  $x = 2$  is a root of the equation  $3x^3 - x^2 - 2t + 4 = 0$ , what is the value of  $t$ ?

6. Which of the following products is a real number?

- (A)  $(1 + i)(1 - i)$
- (B)  $(1 + i)(1 + i)$
- (C)  $(-1 - i)(-1 - i)$
- (D)  $(-1 + i)(-1 + i)$
- (E)  $(-1 + i)(1 - i)$

## Credit Recommendations

The American Council on Education has recommended that colleges grant 3 credits for a score of 50, which is equivalent to a course grade of C, on the CLEP College Algebra exam. Each college, however, is responsible for setting its own policy. For candidates with satisfactory scores on the CLEP College Algebra examination, colleges may grant credit toward fulfillment of a distribution requirement, or for a particular course that matches the exam in content. Check with your school to find out the score it requires for granting credit, the number of credit hours granted and the course that can be bypassed with a passing score.

*Answers to Sample Questions:*

(1) D; (2) B; (3) E; (4) C; (5) 12; (6) A.