

College Algebra with Corequisite Support: A Blended Approach



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Alta College Algebra with Corequisite Support: A Blended Approach is a one-semester course that interleaves developmental-level course content with a regular college-level College Algebra content at the chapter level to create a blended, cohesive course experience for students consistently throughout the semester.

To develop the course, Knewton used four main sources of content: Openstax, videos created by a Math Professor we have partnered with, the Open Textbook Library, and a team of Subject Matter Experts (SMEs). The SMEs come from diverse backgrounds and are all accomplished academics in the field of mathematics.

Alta College Algebra with Corequisite Support: A Blended Approach has two instructional sequences for every learning objective, giving students multiple opportunities to learn new concepts. Alta College Algebra with Corequisite Support: A Blended Approach covers the typical breadth of college algebra topics, and also provides the necessary depth to ensure the course is manageable and engaging for instructors and students alike.

College Algebra with Corequisite Support: A Blended Approach | Table of Contents

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 - Find the inverse of a 3×3 matrix
- Solving Systems with Inverses
 - Solve a system of linear equations using the inverse of a 2×2 matrix
 - Solve a system of linear equations using the inverse of a 3×3 matrix

11.8 Cramer's Rule

- Solving Systems with Cramer's Rule
 - Use Cramer's rule to solve a system of two equations in two variables
 - Use Cramer's rule to solve a system of three equations in three variables
 - Use Cramer's rule to solve inconsistent or dependent systems

Chapter 12: Conic Sections

12.1 Ellipses

- Ellipses Centered at the Origin
 - Identify key points and axes of ellipses from a graph
 - Identify key points and axes of ellipses from an equation
 - Write the equation in standard form of an ellipse centered at the origin
 - Graph an ellipse centered at the origin from an equation in standard form
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- Ellipses Not Centered at the Origin
 - Identify key points and axes of ellipses not centered at the origin
 - Write the equation in standard form of an ellipse not centered at the origin
 - Graph an ellipse not centered at the origin
- Ellipses Not in Standard Form and Applications of Ellipses
 - Convert an equation of an ellipse into standard form
 - Graph an ellipse where the equation is not given in standard form
 - Use ellipses in applications

12.2 Hyperbolas

- Hyperbolas Centered at the Origin
 - Locate the vertices and foci of a hyperbola from a graph
 - Identify vertices, foci, and asymptotes of a hyperbola from an equation
 - Write the equation of a hyperbola centered at the origin in standard form
 - Graph a hyperbola centered at the origin from an equation in standard form
- Hyperbolas Not Centered at the Origin
 - Identify vertices, foci, and asymptotes of a hyperbola not centered at the origin
 - Write the equation of a hyperbola not centered at the origin
 - Graph a hyperbola not centered at the origin from an equation in standard form
- Hyperbolas Not in Standard Form and Applications of Hyperbolas
 - Convert an equation of a hyperbola into standard form
 - Graph a hyperbola from an equation given in general form
 - Use hyperbolas in applications

12.3 Parabolas

- Parabolas Centered at the Origin
 - Identify key components of a parabola from a graph
 - Identify key components of a parabola from an equation
 - Graph a parabola centered at the origin
 - Write the equation of a parabola centered at the origin in standard form
- Parabolas Not Centered at the Origin
 - Identify key components of a parabola not centered at the origin
 - Graph a parabola not centered at the origin
 - Write the equation of a parabola not centered at the origin in standard form
- Parabolas Not in Standard Form and Applications of Parabolas
 - Convert an equation of a parabola into standard form
 - Graph a parabola from an equation given in general form
 - Use parabolas in applications

Chapter 13: Sequences, Series, and Basic Probability

13.1 Sequences

- Introduction to Sequences
 - Write the terms of a sequence defined by an explicit formula
 - Write the terms of a sequence defined by a piecewise explicit formula
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- Recursive Sequences
 - Write the terms of a sequence defined by a recursive formula
 - Write the terms of a sequence defined by a recursive formula with more than one initial term

13.2 Arithmetic Sequences

- Arithmetic Sequences
 - Find the common difference of an arithmetic sequence
 - Write terms of an arithmetic sequence
 - Write a recursive formula for an arithmetic sequence
 - Write an explicit formula for an arithmetic sequence
- Applications of Arithmetic Sequences
 - Find specific terms of an arithmetic sequence given other terms
 - Solve application problems with arithmetic sequences

13.3 Geometric Sequences

- Geometric Sequences
 - Find the common ratio of a geometric sequence
 - Write terms of a geometric sequence
 - Write a recursive formula for a geometric sequence
 - Write an explicit formula for a geometric sequence
- Applications of Geometric Sequences
 - Write an explicit formula for the n th term of a sequence
 - Solve application problems with geometric sequences
 - Solve geometric sequence problems

13.4 Series

- Summation Notation and Arithmetic Series
 - Evaluate expressions using summation notation
 - Find the sum of a finite arithmetic series
- Finite and Infinite Geometric Series
 - Find the sum of a finite geometric series
 - Determine if the sum of an infinite series is defined
 - Find the sum of an infinite geometric series
- Applications of Series
 - Solve application problems with arithmetic series
 - Solve application problems with geometric series
 - Find the equivalent fraction for a repeating decimal
 - Solve an annuity problem

13.5 Counting Theory

- The Addition and Multiplication Principles
 - Solve counting problems using the addition principle
 - Solve counting problems using the multiplication principle
 - Evaluate an expression with factorials
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- Permutations
 - Find the number of permutations of n distinct objects using the multiplication principle
 - Find the number of permutations of n distinct objects using a formula
 - Find the number of permutations of n non-distinct objects
- Combinations
 - Find the number of combinations using the formula
 - Find the number of subsets of a set

13.6 Binomial Theorem

- Binomial Expansion
 - Find a binomial coefficient
 - Expand a binomial using the binomial theorem
 - Use the binomial theorem to find a single term

13.7 Probability

- Basic Probability
 - Compute the probability of equally likely outcomes
 - Compute the probability of the union of two events
 - Use the complement rule to compute probabilities
 - Compute probability using counting theory
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