

Curriculum Guide College Algebra

Unit 1: Review of Basic Algebra

15 Lessons

CA#1

Objectives	Methods	Resources	Assessment
The students will 1. Work with sets of real numbers. 2. Use integer exponents and scientific notation. 3. Evaluate and simplify expressions using rational exponents and radicals. 4. Perform operations on polynomial expressions. 5. Factor polynomial expressions. 6. Simplify and perform operations on rational expressions.	<ul style="list-style-type: none">• teacher lecture• teacher working examples on the board• teacher showing problems on overhead projector• student guided practice of problems in book• cooperative learning groups• individual assistance• partner work• worksheets• homework• video• internet websites	College Algebra; 9 th Ed., Thomson Brooks/Cole, 2007	<ul style="list-style-type: none">• 5 minute checks• check homework• Quizzes• Mid-Chapter Test• Free-Response Chapter test• Oral response• Board work

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Unit 2: Equations and Inequalities

25 Lessons

CA#2, CA#5

Objectives	Methods	Resources	Assessment
The students will 1. Solve linear equations or equations that lead to linear equations. 2. Solve quadratic equations using factoring, completing the square, and quadratic formula. 3. Perform the four basic operations on complex numbers. 4. Solve quadratic equations in the complex number system. 5. Solve equations involving radicals. 6. Solve equations quadratic in form. 7. Solve higher degree polynomial equations by factoring. 8. Solve linear inequalities and express the answer in interval notation. 9. Solve equations and inequalities involving absolute value. 10. Solve applied problems.	<ul style="list-style-type: none">• teacher lecture• teacher working examples on the board• teacher showing problems on overhead projector• student guided practice of problems in book• cooperative learning groups• individual assistance• partner work• worksheets• homework• video• internet websites	College Algebra; 9 th Ed., Thomson Brooks/Cole, 2007	<ul style="list-style-type: none">• 5 minute checks• check homework• Quizzes• Mid-Chapter Test• Free-Response Chapter test• Oral response• Board work

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Unit 3: The Rectangular Coordinate System and Graphs of Equations

12 Lessons

CA#2

Objectives	Methods	Resources	Assessment
<p>The students will</p> <ol style="list-style-type: none"> 1. Use the distance and midpoint formulas. 2. Graph equations by plotting points. 3. Find the intercepts of an equation. 4. Determine whether the graph of an equation has symmetry. 5. Find the slope of a line. 6. Graph a line. 7. Given sufficient information, find the equation of a line in slope-intercept and general form. 8. Using the concept of slope, determine whether two lines are parallel, perpendicular, or neither. 9. Given the equation of a line, find the equation of a line that is either parallel or perpendicular to the given line. 10. Write the equation of a circle in standard form. 11. Given an equation of a circle in general form, write it in standard form, find the center and radius, and graph the circle. 	<ul style="list-style-type: none"> • teacher lecture • teacher working examples on the board • teacher showing problems on overhead projector • student guided practice of problems in book • cooperative learning groups • individual assistance • partner work • worksheets • homework • video • internet websites 	<p>College Algebra; 9th Ed., Thomson Brooks/Cole, 2007</p>	<ul style="list-style-type: none"> • 5 minute checks • check homework • Quizzes • Mid-Chapter Test • Free-Response Chapter test • Oral response • Board work

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Unit 4: Functions

20 Lessons

CA#2, CA#4

Objectives	Methods	Resources	Assessment
<p>The students will</p> <ol style="list-style-type: none"> 1. Determine whether a relation determines a function. 2. Evaluate a function. 3. Find the domain of a function. 4. Find the sum, difference, product, and quotient of two functions. 5. Determine whether a particular graph represents a function. 6. Obtain information such as domain, range, and intercepts from the graph of a function. 7. Determine whether a function is even, odd, or neither from the equation and graph of the function. 8. Determine from the graph of a function where it is increasing, decreasing or constant. 9. Use the graph of a function to determine its local minimum and maximum values. 10. Find the average rate of change of a function. 11. Graph the functions in the library of functions which is a list of commonly encountered function. 12. Be familiar with piecewise-defined functions. 13. Graph functions using horizontal and vertical shifts, using compressions and stretches, and using reflections about the x-axis or y-axis. 	<ul style="list-style-type: none"> • teacher lecture • teacher working examples on the board • teacher showing problems on overhead projector • student guided practice of problems in book • cooperative learning groups • individual assistance • partner work • worksheets • homework • video • internet websites 	<p>College Algebra; 9th Ed., Thomson Brooks/Cole, 2007</p>	<ul style="list-style-type: none"> • 5 minute checks • check homework • Quizzes • Mid-Chapter Test • Free-Response Chapter test • Oral response • Board work

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Unit 5: Exponential and Logarithmic Functions

15 Lessons

CA#4, CA#5

Objectives	Methods	Resources	Assessment
<p>The students will</p> <ol style="list-style-type: none"> 1. Form a composite function and find its domain. 2. Determine the inverse of a one-to-one function. 3. Obtain the graph of the inverse function from the graph of the original function. 4. Be familiar with exponential functions. 5. Graph exponential functions. 6. Solve exponential equations. 7. Convert exponential expressions to logarithmic expressions and visa versa. 8. Evaluate logarithmic functions. 9. Determine the domain of a logarithmic function. 10. Graph logarithmic functions. 11. Solve logarithmic equations. 12. Work with the properties of logarithms. 13. Evaluate logarithms whose base is neither 10 nor e. 14. Solve application problems involving either exponential or logarithmic functions. 	<ul style="list-style-type: none"> • teacher lecture • teacher working examples on the board • teacher showing problems on overhead projector • student guided practice of problems in book • cooperative learning groups • individual assistance • partner work • worksheets • homework • video • internet websites 	<p>College Algebra; 9th Ed., Thomson Brooks/Cole, 2007</p>	<ul style="list-style-type: none"> • 5 minute checks • check homework • Quizzes • Mid-Chapter Test • Free-Response Chapter test • Oral response • Board work

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Unit 6: Solving Polynomial Equations

10 Lessons

CA#3, CA#4

Objectives	Methods	Resources	Assessment
The students will 1. Use remainder and factor theorems to evaluate polynomial functions and to identify roots of polynomial functions. 2. Perform synthetic division of polynomial expressions and interpret the results. 3. Find rational roots of polynomial functions. 4. Find irrational roots of polynomial functions.	<ul style="list-style-type: none">• teacher lecture• teacher working examples on the board• teacher showing problems on overhead projector• student guided practice of problems in book• cooperative learning groups• individual assistance• partner work• worksheets• homework• video• internet websites	College Algebra; 9 th Ed., Thomson Brooks/Cole, 2007	<ul style="list-style-type: none">• 5 minute checks• check homework• Quizzes• Mid-Chapter Test• Free-Response Chapter test• Oral response• Board work

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Unit 7: Linear Systems

20 Lessons

CA#6

Objectives	Methods	Resources	Assessment
The students will 1. Solve a system of linear equations by substitution and elimination. 2. Solve a system of equations using matrices. 3. Evaluate determinants of matrices. 4. Use Cramer's rule to solve a system of linear equations. 5. Perform partial fraction decomposition using matrices.	<ul style="list-style-type: none">• teacher lecture• teacher working examples on the board• teacher showing problems on overhead projector• student guided practice of problems in book• cooperative learning groups• individual assistance• partner work• worksheets• homework• video• internet websites	College Algebra; 9 th Ed., Thomson Brooks/Cole, 2007	<ul style="list-style-type: none">• 5 minute checks• check homework• Quizzes• Mid-Chapter Test• Free-Response Chapter test• Oral response• Board work

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Unit 8: Conic Sections and Quadratic Systems

12 Lessons

CA#7

Objectives	Methods	Resources	Assessment
The students will <ol style="list-style-type: none">1. Find the equations of and graph circles and parabolas.2. Find the equations of a graph ellipses.3. Find the equations of and graph hyperbolas.4. Solve systems of second degree equations.	<ul style="list-style-type: none">• teacher lecture• teacher working examples on the board• student guided practice of problems in book• cooperative learning groups• individual assistance• partner work• worksheets• homework	College Algebra, 9 th Ed, Thomson Brooks/Cole, 2007	<ul style="list-style-type: none">• check homework• Quizzes• Mid-Chapter Test• Free-Response Chapter test• Oral response• Board work

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Unit 9: Natural Number Functions

18 Lessons

CA#8

Objectives	Methods	Resources	Assessment
The students will 5. Use the Binomial Theorem. 6. Define and use sequences and series. 7. Use summation notation. 8. Find the nth term of an arithmetic sequence. 9. Find the arithmetic means between arithmetic terms. 10. Find the sum of the first n terms of an arithmetic sequence. 11. Find the nth term of an geometric sequence. 12. Find the geometric means between geometric terms. 13. Find the sum of the first n terms of an geometric sequence.	<ul style="list-style-type: none">• teacher lecture• teacher working examples on the board• student guided practice of problems in book• cooperative learning groups• individual assistance• partner work• worksheets• homework	College Algebra, 9 th Ed, Thomson Brooks/Cole, 2007	<ul style="list-style-type: none">• check homework• Quizzes• Mid-Chapter Test• Free-Response Chapter test• Oral response• Board work

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Unit 10: Mathematics of Finance

8 Lessons

PA#1, PA#2, PA#3, PA#1

Objectives	Methods	Resources	Assessment
The students will 14. Solve problems involving simple and compound interest. 15. Calculate the future value of an annuity. 16. Calculate the present value of an annuity.	<ul style="list-style-type: none">• teacher lecture• teacher working examples on the board• student guided practice of problems in book• cooperative learning groups• individual assistance• partner work• worksheets• homework	College Algebra, 9 th Ed, Thomson Brooks/Cole, 2007	<ul style="list-style-type: none">• check homework• Quizzes• Mid-Chapter Test• Free-Response Chapter test• Oral response• Board work