LAGUARDIA COMMUNITY COLLEGE
CITY UNIVERSITY OF NEW YORK
DEPARTMENT OF MATHEMATICS, ENGINEERING AND COMPUTER SCIENCE

MAT 117 – ALGEBRA AND TRIGONOMETRY
6 Lecture Hours, 1 Lab Hour, 3 Credits
Prerequisite: MAT095 or placement (If you do not have the prerequisite, you may be removed from the course without notice.)

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**REQUIRED COURSE MATERIALS:**

- Textbook: *College Algebra and Trigonometry* by Julie Miller and Donna Gerken, McGraw-Hill, 2017
- Online Access: www.aleks.com New copies of the required textbook contain an online access code.
- Calculator: A scientific calculator is necessary for this course. You will not be allowed to use graphing calculators or calculators requiring the use of devices such as phones, tablets, or computers.

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**CATALOG DESCRIPTION**

MAT117 comprises topics from both elementary and intermediate algebra and enables students requiring remedial MAT096 to earn college credit for MAT115 at the same time. All intermediate algebra topics are treated--polynomial, rational, exponential, logarithmic, and trigonometric expressions/functions in addition to basic right-triangle trigonometry. Rates of change and mathematical modeling are featured when appropriate. Instructional methods include lecture, guided groupwork and instructor feedback.

**PURPOSES AND GOALS**

MAT117 is designed to allow students who require MAT096 and college algebra to exit developmental mathematics and earn college credit within one semester. There will be strong emphasis on the conceptual aspects of algebra that underlie algebraic procedures. Because research shows that pedagogy is as important as curriculum for student success, instructors will employ a variety of instructional methods (e.g., lecture, guided groupwork, and graded/nongraded formative assessments/feedback).

**INSTRUCTIONAL OBJECTIVES**

1. Enable students to improve their accuracy and fluency with the four fundamental arithmetic operations.
2. Introduce students to the concept of function and its application in modeling (linear and exponential cases in particular).
3. Familiarize students with the equivalence between the rate of change of a linear function and the (constant) slope of its graph, enabling students to graph straight line equations.
4. Introduce students to quadratic functions and their graphs, and enable them to find "zeroes" by solving quadratic equations.
5. Familiarize students with the arithmetic of rational expressions, reinforce the algebra required to solve equations involving rational expressions, and introduce rational functions.
6. Familiarize students with the arithmetic of radical expressions and provide them with algebraic methods for solving equations involving radicals.

7. Introduce students to exponential and (via the concept of inverse) logarithmic functions, and their graphs; additionally, provide students with the requisite computational and algebraic skills necessary to solve exponential and logarithmic equations.
8. Introduce students to right-triangle trigonometry, featuring the basic trigonometric ratios; and then familiarize them with the properties of the sine and cosine functions.
9. Enable students to identify and apply appropriate mathematical methods to solve problems in real-world contexts.

**PERFORMANCE OBJECTIVES**

1. Add, subtract, multiply, and divide rational and decimal numbers with accuracy and fluency.
2. Explain and describe the functional concept/properties, and compare and contrast linear and exponential data.
3. Describe the equivalence of rate of change and slope for a linear function, and apply it in graphing straight lines.
4. Graph quadratic functions and solve quadratic equations.
5. Carry out arithmetic operations with rational expressions and solve equations involving them.
6. Carry out arithmetic operations with radical expressions and solve equations involving them.
7. Sketch graphs of exponential and logarithmic functions, and solve exponential and logarithmic equations.
8. Solve right-triangle trigonometry problems and sketch the graphs of the sine and cosine functions.
9. Apply mathematical techniques appropriately to solve real-world problems.

**EVALUATION:**

The purpose of a grading system is to give students, and those who will read their transcripts, an accurate record of their performance in this course. The role of the Mathematics, Engineering and Computer Science Department is to provide a fair, valid, and reliable structure for assessing student achievement.

| CATEGORY | PERCENTAGE |
|---|---|
| Online (Pie) Homework | 15% |
| Quizzes | 10% |
| Projects | 10% |
| Instructor's Tests (3 @ 11⅔% each) | 35% |
| Departmental Final Exam | 30% |

**EXPLANATION OF GRADING CATEGORIES**

- **Online (Pie) Homework:** Students will work online on an "ALEKS pie" containing 11 course objectives. Each objective includes numerous topics. Credit will be earned for each mastered topic.
- **Quizzes:** Several short assessments will be administered throughout the semester.
- **Projects:** Your instructor will assign inquiry-learning projects throughout the semester (examples may be found at http://ctl.laguardia.edu/pql/sampler/).
- **Instructor's Tests:** Your instructor will develop and administer three tests during the course of the semester.
- **Departmental Final Exam:** This two-hour written exam will be given during final examination week. It will be cumulative and cover all topics.

**PASSING GRADE POLICY**

In order to pass this course, you must have an **average total score of at least 60%** and **no more than 12 hours of unexcused absences**.

If you do not meet the above criteria, you will be assigned an F or WU grade for the course. If, however, your overall score is at least 40 and you have no more than 12 hours of unexcused absences, you will be given the opportunity to exit from the MAT096 portion of the class. Students who choose to take advantage of this opportunity will enroll in a brief intervention course and take the CUNY Elementary Algebra Final Exam (CEAFE). A grade of 60 or higher on the CEAFE will be required to exit MAT096 and be placed directly into MAT115. If you meet the criteria to exit MAT096 and pass MAT115 with a grade of C or higher, the F from MAT117 will not be part of your GPA (pursuant to LaGuardia's F Grade Policy, which may be found in the Academic Requirements and Policies section of the LaGuardia Community College Catalog).

**ACADEMIC INTEGRITY**

This class will be conducted in compliance with LaGuardia Community College's academic integrity policy. Further information on possible infractions and repercussions may be viewed at http://library.laguardia.edu/files/pdf/academicintegritypolicy.pdf.

**ATTENDANCE**

The maximum number of absences will be **12 hours**. Unexcused absences beyond this maximum will result in a grade of **WU** or **F**.

**ADDITIONAL POLICIES**

Additional course policies may be specified at the discretion of the instructor.

**COURSE OUTLINE (Oriented to Text)**

| Week | Hours | Topic | Section | Exercises | Pie Homework |
|---|---|---|---|---|---|
| Week 1 | 1 | Arithmetic of Real Numbers | Supplemental Materials[1] | | Arithmetic Review |
| | 2 | Exponents and Whole Number Roots | R.1 | p15(75-78) | |
| | 3 | Order of Operations | R.1 | p15(79-88) | |
| | 4 | Simplifying and Evaluating Algebraic Expressions | R.1 | p16-17(97-116, 129-134) | |
| | 5-6 | Linear Equations | 1.1 | p91-92(9-30,39-44) | Linear Equations |
| | 7 | Lab: Course and ALEKS Overview | | | |
| Week 2 | 8 | Literal Equations | 1.1 | p93(67-88) | |
| | 9 | Applications of Linear Equations | 1.2 | p100(7-14) | |
| | 10-11 | Intervals and Notation<br>Linear Inequalities | R.1<br>1.7 | p14(29-46)<br>p153(9-26) | |
| | 12 | Absolute Value Equations | 1.6 | p141-142(33-54) | |

[1] Intermediate Algebra Chapter 3 (11-52)

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| | 13 | Absolute Value Inequalities | 1.7 | p153-154(27-28, 43-68) | |
| | 14 | Lab: Instructors Discretion | | | |
| Week 3 | 15 | Simplifying Radical Expressions | R.3 | p35(53,59, 61-64(a)) | Functions & Formulas |
| | 16-17 | The Pythagorean Theorem | Supplemental Materials | | |
| | | The Cartesian Coordinate System Distance in the Plane | 2.1 | p173(9-10,11-14(a)) | |
| | 18-19 | Relations and Functions<br>Function Notation<br>Domain and Range | 2.3 | P192-196(9-12, 15-32, 33-62, 87-96) | |
| | 20 | Graph of a Function | 2.3 | p196(111-114) | |
| | 21 | Lab: Instructors Discretion | | | |
| Week 4 | 22 | Linear Functions and Their Graphs | 2.4 | p207(9-20) | Linear Functions |
| | 23-25 | Slopes, Intercepts, Graphs, and Equations of Lines | 2.4<br>2.5 | p208-209(25-34, 37-42,51-62,65-78)<br>p222(16-22) | |
| | 26 | Linear Models | 2.5 | p223-224(51-60) | |
| | 27 | Systems of Linear Equations | 9.1 | p819-820(7-10, 15-34) | |
| | 28 | Lab: Instructor Test 1 | | | |
| Week 5 | 29 | Applications of Systems of Equations | 9.1 | p821(53-62) | |
| | 30-32 | Properties of Integer Exponents | R.2 | p24-25(7-64) | Exponents and Polynomials |
| | 33-34 | Polynomials and Polynomial Arithmetic | R.4<br>3.3 | p44-45(9-20, 23-48)<br>p325(7-22) | |
| | 35 | Lab: Instructor's Discretion | | | |
| Week 6 | 36-40 | Factoring Polynomial Expressions | R.5 | p56-57(5-12,19-22, 23-34,37-48) | Factoring |
| | 41 | Quadratic Equations and Applications | 1.4<br>1.5 | p123-124(7-18, 19-30,51-66)<br>p130-132(5-17, 33-38) | Quadratic Functions |
| | 42 | Lab: Instructor's Discretion | | | |
| Week 7 | 43-44 | Quadratic Equations and Applications Continued | | | |
| | 45-46 | Quadratic Functions and Their Graphs | 3.1 | p295-296(25-42) | |
| | 47 | Quadratic Models | 3.1 | P296-297(43-48, 53,54) | |
| | 48 | Simplifying, Addition, and Multiplication of Radical Expressions (Square Root only) | R.3<br>R.4<br>R.6 | p35-36(71,72,78, 87,88)<br>p46(73-88)<br>p69-70(69,70,73-80) | Radical Functions |

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| | 49 | Lab: Instructor's Discretion | | | |
| Week 8 | 50 | Simplifying, Addition, and Multiplication of Radical Expressions Continued | | | |
| | 51 | Radical Equations | 1.6 | p142(55-62,67-70) | |
| | 52 | Domains of Radical Functions<br>Roots and Rational Exponents | 2.3<br>R.3 | p196(99-100(a,b))<br>p34-35(9-50) | |
| | 53 | Domains of Rational Functions | 2.3<br>3.5 | p196(97-98, 99-100(c))<br>p362(7-12) | Rational Functions |
| | 54-55 | Simplifying and Arithmetic with Rational Expressions | R.6 | p68-69(7-20,24, 27-34,35-56) | |
| | 56 | Lab: Instructor Test 2 | | | |
| Week 9 | 57 | Simplifying and Arithmetic with Rational Expressions continued | | | |
| | 58-59 | Rational Equations | 1.1<br>1.6 | p92-93(45-66)<br>p141(21-28) | |
| | 60 | Exponential Functions and Their Graphs | 4.2 | p423(9-12, 15-22) | Exponential and Logarithmic Functions |
| | 61 | Exponential Models | 4.2 | p424-425(45-57) | |
| | 62 | Logarithmic Functions and Their Graphs | 4.3 | p438-439(9-50, 65-70) | |
| | 63 | Lab: Instructor's Discretion | | | |
| Week 10 | 64 | Logarithmic Functions and Their Graphs Continued | | | |
| | 65-66 | Properties of Logarithms | 4.3<br>4.4 | p439(55-64)<br>p450-451(7-68) | |
| | 67-68 | Exponential and Logarithmic Equations | 4.5 | p462-463(5-30, 35-60) | |
| | 69 | Exponential Models Revisited | 4.5<br>4.6 | p463(61-70)<br>p476-478(15-30) | |
| | 70 | Lab: Instructor's Discretion | | | |
| Week 11 | 71-72 | Angles and Their Measurement | 5.1 | p503-504 (25,26,35, 37-42,45-70) | Trigonometric Functions |
| | 73-75 | Right Triangle Trigonometry and Applications | 5.2 | p521-523(13-32, 61-73) | |
| | 76 | Trigonometric Functions of any Angle | 5.3 | p535-536(8-54, 63-69) | |
| | 77 | Lab: Instructor Test 3 | | | |
| Week 12 | 78-80 | Trigonometric Functions of any Angle continued | | | |
| | 81-82 | Graphs of Sinusoidal Functions | 5.5 | p565(15,16,19-32) | |
| | 83-84 | Final Exam Review | | | |
| Week 13 | 85-86 | Final Exam | | | |

**COURSE OUTLINE (Oriented to ALEKS)**

| Week | Hours | Topic | ALEKS Topics | Pie Objective |
|---|---|---|---|---|
| Week 1 | 1 | Arithmetic of Real Numbers | - Signed fraction addition or subtraction: Basic<br>- Signed fraction subtraction involving double negation<br>- Signed fraction multiplication: Basic<br>- Signed fraction division | Arithmetic Review |
| | 2 | Exponents and Whole Number Roots | - Exponents and integers: (two topics)<br>- Exponents and signed fractions<br>- Finding all square roots of a number<br>- Square roots of a rational perfect square<br>- Square roots of perfect squares with signs | |
| | 3 | Order of Operations | - Order of operations with integers<br>- Order of operations with integers and exponents | |
| | 4 | Simplifying and Evaluating Algebraic Expressions | - Evaluating a quadratic expression: Integers | |
| | 5-6 | Linear Equations | - Least common multiple of 2 numbers<br>- Multiplicative property of equality with signed fractions<br>- Solving a multi-step equation given in fractional form<br>- Solving a linear equation with several occurrences of the variable (three topics)<br>- Solving a two-step equation with signed fractions<br>- Solving a linear equation with several occurrences of the variable (two topics)<br>- Solving equations with zero, one, or infinitely many solutions | Linear Equations |
| Wee k 2 | 8 | Literal Equations | - Solving for a variable in terms of other variables (five topics) | |

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| | 9 | Applications of Linear Equations | - Solving a value mixture problem using a linear equation<br>- Finding the multiplier to give a final amount after a percentage increase or decrease<br>- Finding the original price given the sale price and percent discount<br>- Finding simple interest without a calculator<br>- Word problem on proportions | |
| | 10-11 | Intervals and Notation<br>Linear Inequalities | - Set builder and interval notation<br>- Graphing a linear inequality on the number line<br>- Graphing a compound inequality on the number line<br>- Additive property of inequality with signed fractions<br>- Multiplicative property of inequality with signed fractions<br>- Solving a two-step linear inequality (two topics)<br>- Solving a linear inequality with multiple occurrences of the variable | |
| | 12 | Absolute Value Equations | - Solving an absolute value equation (three topics) | |
| | 13 | Absolute Value Inequalities | - Solving an absolute value inequality (four topics) | |
| Week 3 | 15 | Simplifying Radical Expressions | - Introduction to the product rule of exponents<br>- Introduction to the quotient rule of exponents<br>- Simplifying the square root of a whole number less than 100 | Functions & Formulas |
| | 16-17 | The Pythagorean Theorem | - Introduction to the Pythagorean Theorem<br>- Pythagorean Theorem<br>- Word problem involving the Pythagorean Theorem | |
| | | The Cartesian Coordinate System<br>Distance in the Plane | - Reading a point in the coordinate plane<br>- Plotting a point in the coordinate plane<br>- Distance between two points in the plane: Exact answers | |

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| | 18-19 | Relations and Functions<br>Function Notation<br>Domain and Range | - Identifying functions from relations<br>- Domain and range from ordered pairs<br>- Determining whether an equation defines a function<br>- Table for a linear function<br>- Evaluating functions: Linear and quadratic or cubic<br>- Evaluating a rational function<br>- Evaluating functions: Absolute value, rational, radical<br>- Variable expressions as inputs of functions | |
| | 20 | Graph of a Function | - Vertical line test<br>- Finding x- and y-intercepts given the graph of a line on a grid<br>- Finding intercepts of a nonlinear function given its graph<br>-Finding inputs and outputs of a function from its graph<br>-Domain and range from the graph of a continuous function | |
| W eek 4 | 22 | Linear Functions and Their Graphs | - Finding a difference quotient for a linear or quadratic function[2]<br>- Identifying solutions to a linear equation in two variables<br>- Finding the x- and y-intercepts of a line given its equation<br>- Graphing a line by first finding its x- and y- intercepts<br>- Graphing a vertical or horizontal line | Linear Functions |

[2] Linear only goes here, in *Quadratic Functions* ALEKS Objective

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| | 23-25 | Slopes, Intercepts, Graphs, and Equations of Lines | - Finding slope given two points on the line<br>- Finding slope given the graph of a line on a grid<br>- Finding the slope of horizontal and vertical lines<br>- Graphing a line given its slope and y-intercept<br>- Graphing a line through a given point with a given slope<br>- Finding the slope and y-intercept of a line given its equation (two topics)<br>- Graphing a line by first finding its slope and y-intercept<br>- Graphing a function of the form f(x)=ax+b (two topics)<br>- Writing an equation of a line given its slope and y-intercept<br>- Writing an equation in slope-intercept form given the slope and a point<br>- Writing the equation of the line through two given points<br>- Writing the equations of vertical and horizontal lines through a given point | |
| | 26 | Linear Models | - Writing and evaluating a functions that models a real-world situation<br>- Interpreting the parameters of a linear functions that models a real-world situation<br>- Finding inputs and outputs of a two-step function that models a real-world situation | |
| | 27 | Systems of Linear Equations | - Solving a system of linear equations (three topics) | |
| Week 5 | 29 | Applications of Systems of Equations | - Solving a value mixture problem using a system of linear equations | |
| | 30-32 | Properties of Integer Exponents | - Introduction to the product rule of exponents[3]<br>- Product rule with positive exponents: Multivariate<br>- Introduction to the quotient rule of exponents[4]<br>- Introduction to the power of a product rule of exponents<br>- Introduction to the power of a power rule of exponents | Exponents and Polynomials |

[3] In *Functions and Formulas* Objective
[4] In *Functions and Formulas* Objective

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| | | | - Power rules with positive exponents: Multivariate products<br>- Power and product rules with positive exponents<br>- Simplifying a ratio of univariate monomials<br>- Power rules with positive exponents: Multivariate quotients<br>- Quotient of expressions involving exponents<br>- Simplifying a ratio of multivariate monomials<br>- Power and quotient rules with positive exponents<br>- Evaluating expressions with exponents of zero<br>- Evaluating an expression with a negative exponent (three topics)<br>- Rewriting an algebraic expression without a negative exponent<br>- Introduction to the product rule with negative exponents<br>- Quotient rule with negative exponents<br>- Power of a power rule with negative exponents<br>- Power rules with negative exponents<br>- Power, product, and quotient rules with negative exponents | |
| | 33-34 | Polynomials and Polynomial Arithmetic | - Degree and leading coefficient of a univariate polynomial<br>- Simplifying a sum or difference of two univariate polynomials<br>- Multiplying a univariate polynomial by a monomial (two topics)<br>- Multiplying binomials with leading coefficients of 1<br>- Multiplication involving binomials and trinomials in one variable<br>- Multiplying binomials in two variables<br>- Multiplying conjugate binomials<br>- Squaring a binomial<br>- Multiplying binomials with negative coefficients<br>- Dividing a polynomial by a monomial<br>- Polynomial long division | |

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| Week 6 | 36-40 | Factoring Polynomial Expressions | - Greatest common factor of 2 numbers<br>- Greatest common factor of three univariate monomials<br>- Greatest common factor of two multivariate monomials<br>- Factoring out a monomial from a polynomial (two topics)<br>- Factoring out a binomial from a polynomial<br>- Factoring a univariate polynomial by grouping<br>- Factoring a quadratic with leading coefficient 1<br>- Factoring out a constant before factoring a quadratic<br>- Factoring a quadratic by the ac-method<br>- Factoring a quadratic with a negative leading coefficient<br>- Factoring a product of a quadratic trinomial and a monomial<br>- Factoring a difference of squares in one variable (two topics)<br>- Factoring a polynomial involving a GCF and a difference of squares<br>- Factoring with repeated use of the difference of squares formula<br>- Factoring a sum or difference of two cubes | Factoring |
| | 41, 43-44 | Quadratic Equations and Applications | - Solving an equation written in factored form<br>- Solving a quadratic equation using the square root property<br>- Applying the quadratic formula<br>- Finding the roots of a quadratic equation (three topics)<br>- Solving a word problem using a quadratic equation (two topics) | Quadratic Functions |
| Week 7 | 45-46 | Quadratic Functions and Their Graphs | - Finding a difference quotient for a linear or quadratic function<br>- Finding the x-intercepts and the vertex of a parabola<br>- Graphing a parabola (two topics)<br>- Finding the vertex, intercepts, and axis of symmetry from the graph of a parabola<br>- Domain and range from the graph of a quadratic function | |

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| | | | - Finding the maximum or minimum of a quadratic function<br>- Range of a quadratic function | |
| | 47 | Quadratic Models | - Word problem involving the maximum or minimum of a quadratic function | |
| | 48,50 | Simplifying, Addition, and Multiplication of Radical Expressions (Square Root only) | - Simplifying a radical expression with an even exponent<br>- Introduction to simplifying a radical expression with an odd exponent<br>- Simplifying a radical expression with two variables<br>- Introduction to square root addition or subtraction<br>- Square root addition or subtraction<br>- Square root multiplication<br>- Simplifying a product involving square roots using the distributive property<br>- Special products of radical expressions: Conjugates and squaring<br>- Simplifying a quotient of square roots<br>- Rationalizing a denominator (three topics) | Radical Functions |
| Week 8 | 51 | Radical Equations | - Introduction to solving a radical equation<br>- Solving a radical equation that simplifies to a linear equation (three topics)<br>- Solving a radical equation that simplifies to a quadratic equation | |
| | 52 | Domains of Radical Functions<br>Roots and Rational Exponents | - Domain of a square root function (two topics)<br>- Converting between radical form and exponent form<br>- Rational exponents: Unit fraction exponents (two topics)<br>- Rational exponents: Non-unit fraction exponent with whole number base<br>- Rational exponents: negative exponents and fractional bases<br>- Rational exponents: Product rule | |
| | 53 | Domains of Rational Functions | - Restriction on a variable in a denominator<br>- Domain of a rational function: excluded values<br>- Finding the domain of a fractional function involving radicals | Rational Functions |

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| | 54-55, 57 | Simplifying and Arithmetic with Rational Expressions | - Simplifying a ratio of factored polynomials: Linear factors<br>- Simplifying a ration of linear polynomials: 1, -1, and no simplification<br>- Simplifying a ratio of polynomials (four topics)<br>- Multiplying rational expressions (two topics)<br>- Dividing rational expressions (two topics)<br>- Introduction to the LCM of two monomials<br>- Finding the LCD of rational expressions (three topics)<br>- Writing equivalent rational expressions (three topics)<br>- Introduction to adding fractions with variables and common denominators<br>- Adding rational expressions with common denominators (three topics)<br>- Adding rational expressions with different denominators and a single occurrence of a variable<br>- Adding rational expressions with denominators ax^n and bx^m<br>- Adding rational expressions with linear denominators without common factors<br>- Adding rational expressions with linear denominators with common factors<br>- Adding rational expressions with denominators ax-b and b-ax<br>- Adding rational expressions involving different quadratic denominators | |
| Week 9 | 58-59 | Rational Equations | - Solving a rational equation that simplifies to linear (five topics)<br>- Solving a rational equation that simplifies to quadratic | |
| | 60 | Exponential Functions and Their Graphs | - Table for an exponential function<br>- Graphing an exponential function | Exponential and Logarithmic Functions |
| | 61 | Exponential Models | - Evaluating an exponential function that models a real-world situation<br>- Finding the final amount in a word problem on compound interest | |
| | 62,64 | Logarithmic Functions and Their Graphs | - Converting between logarithmic and exponential equations<br>- Evaluating logarithmic expressions | |

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| Week 10 | | | - The graph, domain, and range of a logarithmic function | |
| | 65-66 | Properties of Logarithms | - Basic properties of logarithms<br>- Expanding a logarithmic expression (two topics)<br>- Writing an expression as a single logarithm | |
| | 67-68 | Exponential and Logarithmic Equations | - Writing an exponential function rule given a table of ordered pairs<br>- Solving an equation of the form log_b(a)=c<br>- Solving an exponential equation by finding common bases<br>- Solving an exponential equation by using logarithms (two topics)<br>- Solving a multi-step equation involving natural logarithms<br>- Solving an equation involving logarithms on both sides | |
| | 69 | Exponential Models Revisited | - Finding the initial amount and rate of change given an exponential function<br>- Writing an equation that models exponential growth or decay<br>- Finding the rate or time in a word problem on continuous exponential growth or decay | |
| Week 11 | 71-72 | Angles and Their Measurement | - Converting between degree and radian measure (two topics) | Trigonometric Functions |
| | 73-75 | Right Triangle Trigonometry and Applications | - Sine, cosine, and tangent ratios: numbers for side lengths<br>- Finding trigonometric ratios given a right triangle<br>- Using the Pythagorean Theorem to find a trigonometric ratio<br>- Using a trigonometric ratio to find a side length in a right triangle<br>- Using trigonometry to find a length in a word problem with one right triangle | |
| | 76, 78-80 | Trigonometric Functions of any Angle | - Coterminal angles<br>- Reference angles (two topics)<br>- Trigonometric functions and special angles (three topics) | |

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| Week 12 | | | - Using a calculator to approximate sine, cosine, and tangent values<br>- Determining the location of a terminal point given the signs of trigonometric values<br>- Finding values of trigonometric functions given information about an angle (three topics) | |
| | 81-82 | Graphs of Sinusoidal Functions | - Amplitude and period of sine and cosine functions<br>- Sketching the graph of y=asin(x) or y=acos(x)<br>- Sketching the graph of y-asin(bx) or y=acos(bx) | |