Check boxes of Edited Copy of 10023 Sp 11 – 253 Topics (was 261-pilot)

Intermediate Algebra (2011), 3rd Ed. [open all | close all]

- R-Review of Basic Algebraic Concepts
  - Section R.2
    - Ordering integers
    - Plotting integers on a number line
    - Fractional position on a number line
    - Plotting rational numbers on a number line
    - Integers and rational numbers
    - Rational and irrational numbers
    - Graphing a linear inequality on the number line
    - Writing an inequality
    - Writing a compound inequality
    - Writing an inequality for a real-world situation Uncheck (not in core math)
    - Set builder notation
    - Set builder and interval notation
  - Section R.3
    - Absolute value of a number
    - Integer addition: Problem type 2
    - Integer subtraction
    - Integer multiplication and division
    - Mixed arithmetic operations with integers
    - Operations with absolute value
    - Simple addition and subtraction of signed fractions
    - Signed fraction addition: Advanced
    - Signed fraction multiplication: Advanced
    - Signed decimal addition
    - Exponents and integers: Problem type 1
    - Exponents and integers: Problem type 2
    - Exponents and signed fractions
    - Exponents and order of operations
    - Square root of a perfect square
    - Perimeter of a square or a rectangle
    - Area of a square or a rectangle

- Volume of a cube or a rectangular prism
- Circumference and area of a circle
- Volume of a cylinder
- Square root of a rational perfect square
- Section R.4
  - Distributive property: Basic
  - Distributive property: Advanced
  - Combining like terms: Basic
  - Combining like terms: Advanced
  - Combining like terms in a quadratic expression
  - Properties of addition
  - Properties of real numbers
- Chapter R Supplementary Topics
  - Ordering fractions with variables

1-Linear Equations and Inequalities in One Variable

- Section 1.1
  - Additive property of equality with integers
  - Additive property of equality with a negative coefficient
  - Multiplicative property of equality with whole numbers
  - Multiplicative property of equality with signed fractions
  - Multiplicative property of equality with integers
  - Solving a two-step equation with integers
  - Solving a two-step equation with signed fractions
  - Solving a linear equation with several occurrences of the variable: Problem type 1
  - Solving a linear equation with several occurrences of the variable: Problem type 2
  - Solving a linear equation with several occurrences of the variable: Problem type 3
  - Solving a linear equation with several occurrences of the variable: Problem type 4
  - Solving a linear equation with several occurrences of the variable: Problem type 5
  - Solving equations with zero, one, or infinitely many solutions
- Section 1.2
  - Writing a mathematical expression
  - Translating sentences into equations
  - Translating sentences into two-step expressions
  - Solving a fraction word problem using a simple linear equation

- Solving a word problem using a linear equation: Problem type 1
- Solving a word problem using a linear equation: Problem type 3
- Solving a value mixture problem using a linear equation
- Solving a percent mixture problem using a linear equation
- Solving a rate problem using a linear equation
- Word problem on percentage: Problem type 1
- Word problem on percentage: Problem type 2
- Simple interest

Section 1.3

- Evaluation of a linear expression in two variables
- Introduction to algebraic symbol manipulation
- Algebraic symbol manipulation: Problem type 1
- Algebraic symbol manipulation: Problem type 2
- Finding the side length of a rectangle given its perimeter or area
- Perimeters and side lengths with variables
- Word problem involving area and perimeter of a rectangle
- Angle measures of right or isosceles triangles with variables
- Word problem on rates

Section 1.4

- Solving a linear inequality: Problem type 1
- Solving a linear inequality: Problem type 2
- Solving a linear inequality: Problem type 3
- Solving a linear inequality: Problem type 4
- Solving a linear inequality: Problem type 5
- Word problem with linear inequalities: Problem type 1
- Word problem with linear inequalities: Problem type 2
- Finding the value for a new score that will yield a given mean

Section 1.5

- Solving a compound linear inequality: Problem type 1
- Solving a compound linear inequality: Problem type 2
- Graphing a compound linear inequality on the number line
- Union and intersection of finite sets
- Union and intersection of intervals

Section 1.6

- Simple absolute value equation
- Solving an equation involving absolute value: Basic
- Solving an equation involving absolute value: Advanced
- Section 1.7
  - Solving an inequality involving absolute value
  - Solving an inequality involving absolute value: Basic
- Chapter 1 Supplementary Topics
  - Solving an equation to find the value of an expression
  - Solving a word problem using a linear equation: Problem type 2
  - Solving a word problem using a linear equation: Problem type 4
  - Solving a word problem with 3 unknowns using a linear equation
  - Basic word problem on rates
  - Word problem on percentage: Problem type 3
  - Computations from circle graphs
  - Computing a percentage from a table of values
  - Translating sentences into equations: Advanced
  - Sides of polygons having the same perimeter
  - Area between two concentric circles
  - Surface area of a cube or a rectangular prism
  - Surface area of a cylinder
  - Rate of filling of a solid
  - Vertical angles and linear pairs Added-10022 topic
  - Ratio of volumes
  - Circumference ratios

2-Linear Equations in Two Variables and Functions

- Section 2.1
  - Reading a point in the coordinate plane
  - Plotting a point in the coordinate plane
  - Solutions to a linear equation in two variables: Problem type 1
  - Solutions to a linear equation in two variables: Problem type 2
  - Graphing a line given the x- and y-intercepts
  - Graphing a line given its equation in slope-intercept form
  - Graphing a line given its equation in standard form
  - Graphing a vertical or horizontal line

- [x] Finding x- and y-intercepts of a line given the equation in standard form
- [x] Section 2.2
  - [x] Graphing a line through a given point with a given slope
  - [x] Finding slope given the graph of a line on a grid
  - [x] Finding slope given two points on the line
- [x] Section 2.3
  - [x] Finding the slope of a line given its equation
  - [x] Writing an equation of a line given the y-intercept and a point
  - [x] Writing the equation of a line given the slope and a point on the line
  - [x] Writing the equation of the line through two given points
  - [x] Writing the equations of vertical and horizontal lines through a given point
  - [x] Slopes of parallel and perpendicular lines: Problem type 1
  - [x] Slopes of parallel and perpendicular lines: Problem type 2
- [ ] Section 2.4
  - [ ] Writing equations and drawing graphs to fit a narrative Unchecked
  - [ ] Application problem with a linear function: Problem type 1
  - [ ] Application problem with a linear function: Problem type 2
- [x] Section 2.5
  - [x] Domain and range from ordered pairs
  - [x] Domain and range from the graph of a continuous function
- [x] Section 2.6
  - [x] Function tables
  - [ ] Variable expressions as inputs of functions Uncheck in 11010
  - [x] Introduction to functions: Notation and graphs
  - [x] Domain and range from the graph of a continuous function
  - [x] Identifying functions from relations
  - [x] Vertical line test
  - [ ] Domain of a square root function Uncheck in 11010
- [ ] Section 2.7
  - [x] Graphing a parabola: Problem type 1
  - [x] Classifying the graph of a function
  - [ ] Graphing a simple cubic function
  - [ ] Graphing an equation involving absolute value in the plane
- [ ] Chapter 2 Supplementary Topics
  - [ ] Domain and range from the graph of a piecewise function

- Choosing a graph to fit a narrative

3-Systems of Linear Equations and Inequalities

- Section 3.1
  - Classifying systems of linear equations from graphs
  - Graphically solving a system of linear equations
- Section 3.2
  - Solving a simple system using substitution
- Section 3.3
  - Solving a system of linear equations
  - Solving a system that is inconsistent or consistent dependent
- Section 3.4
  - Solving a word problem using a system of linear equations: Problem type 1
  - Solving a word problem using a system of linear equations: Problem type 2
  - Solving a word problem using a system of linear equations: Problem type 3
  - Solving a word problem using a system of linear equations: Problem type 4 necessary?
  - Solving a word problem using a system of linear equations: Problem type 5
- Section 3.5
  - Translating sentences into inequalities
  - Graphing a linear inequality in the plane: Problem type 1
  - Graphing a linear inequality in the plane: Problem type 2
  - Graphing a linear inequality in the plane: Problem type 3
  - Graphing a system of linear inequalities
  - Solving a word problem using a system of linear inequalities
- Section 3.6
  - Solving a system of 3 equations in 3 unknowns
  - Solving a word problem using a 3 by 3 system of linear equations
- Section 3.7
  - Gauss-Jordan elimination with a 2x2 matrix
  - Augmented matrix and solution set of a system of linear equations
- Chapter 3 Supplementary Topics
  - Creating an inconsistent system of linear equations
  - Interpreting the graphs of two functions
  - Linear programming
  - Solving a word problem using linear programming

- Evaluating a piecewise-defined function
- Graphing a piecewise-defined function
- Finding the determinant of a 2x2 matrix
- Finding the determinant of a 3x3 matrix
- Cramer's rule: Problem type 1
- Cramer's rule: Problem type 2
- Scalar multiplication of a matrix
- Addition and subtraction of matrices

4-Polynomials

- Section 4.1
  - Evaluating expressions with exponents of zero
  - Writing a positive number without a negative exponent
  - Writing a negative number without a negative exponent
  - Writing a simple algebraic expression without negative exponents
  - Product rule of exponents
  - Multiplying monomials
  - Product rule of exponents in a multivariate monomial
  - Quotients of expressions involving exponents
  - Quotient rule with negative exponents
  - Introduction to the power rule of exponents
  - Power rule with positive exponents
  - Power rule with negative exponents: Problem type 1
  - Power rule with negative exponents: Problem type 2
  - Using the power and product rules to simplify expressions with positive exponents
  - Using the power, product, and quotient rules to simplify expressions with negative exponents
  - Scientific notation with positive exponent
  - Scientific notation with negative exponent
  - Multiplying and dividing numbers written in scientific notation
- Section 4.2
  - Evaluation of a polynomial in one variable
  - Degree and leading coefficient of a polynomial in one variable
  - Simplifying a sum or difference of polynomials
  - Simplifying a polynomial expression
- Section 4.3

- Multiplying monomials
- Multiplying a monomial and a polynomial: Problem type 1
- Multiplying a monomial and a polynomial: Problem type 2
- Multiplying binomials: Problem type 1
- Squaring a binomial
- Multiplying binomials: Problem type 2
- Multiplying binomials: Problem type 3
- Multiplying polynomials

Section 4.4

- Dividing a polynomial by a monomial: Problem type 1
- Dividing a polynomial by a monomial: Problem type 2
- Polynomial long division: Problem type 1
- Polynomial long division: Problem type 2
- Polynomial long division: Problem type 3
- Synthetic division

Section 4.5

- Introduction to the GCF of two monomials
- Greatest common factor of two monomials
- Factoring out a monomial from a polynomial: Problem type 1
- Factoring out a monomial from a polynomial: Problem type 2
- Factoring a multivariate polynomial by grouping: Problem type 1
- Factoring a multivariate polynomial by grouping: Problem type 2

Section 4.6

- Factoring a quadratic with leading coefficient 1
- Factoring a quadratic with leading coefficient greater than 1
- Factoring a quadratic polynomial in two variables
- Factoring a perfect square
- Factoring a product of a quadratic trinomial and a monomial

Section 4.7

- Factoring a difference of squares
- Factoring with repeated use of the difference of squares formula
- Factoring a sum or difference of two cubes

Section 4.8

- Finding the roots of a quadratic equation with leading coefficient 1

- Finding the roots of a quadratic equation with leading coefficient greater than 1
- Solving a quadratic equation needing simplification
- Solving equations written in factored form
- Roots of a product of polynomials
- Solving a word problem using a quadratic equation with rational roots
- Writing a quadratic equation given the roots and the leading coefficient

Chapter 4 Supplementary Topics

- Ordering numbers with positive exponents
- Ordering numbers with negative exponents
- Degree of a multivariate polynomial checked in 10022

5-Rational Expressions and Rational Equations

Section 5.1

- Ratio of multivariate polynomials
- Simplifying a ratio of polynomials: Problem type 1
- Simplifying a ratio of polynomials: Problem type 2
- Domain of a rational function

Section 5.2

- Multiplying rational expressions: Problem type 1
- Multiplying rational expressions: Problem type 2
- Dividing rational expressions: Problem type 1
- Dividing rational expressions: Problem type 2

Section 5.3

- Introduction to the LCM of two monomials
- Least common multiple of two monomials
- Adding rational expressions with common denominators
- Adding rational expressions with different denominators: ax, bx
- Adding rational expressions with different denominators: Multivariate
- Adding rational expressions with different denominators: x+a, x+b
- Adding rational expressions with different denominators: Quadratic

Section 5.4

- Complex fractions without variables: Problem type 1
- Complex fractions without variables: Problem type 2
- Complex fraction: Problem type 1
- Complex fraction: Problem type 3

- Complex fraction: Problem type 4
- Section 5.5
  - Solving a rational equation that simplifies to a linear equation: Problem type 1
  - Solving a rational equation that simplifies to a linear equation: Problem type 2
  - Solving a rational equation that simplifies to a linear equation: Problem type 3
  - Solving a rational equation that simplifies to a linear equation: Problem type 4
  - Solving a rational equation that simplifies to a quadratic equation: Problem type 1
  - Solving a rational equation that simplifies to a quadratic equation: Problem type 2
  - Solving a rational equation that simplifies to a quadratic equation: Problem type 3
- Section 5.6
  - Solving a proportion: Advanced
  - Word problem on proportions: Problem type 1
  - Word problem on proportions: Problem type 2
  - Word problem involving multiple rates
  - Solving a word problem using a rational equation
  - Similar polygons
- Section 5.7
  - Word problem on direct variation
  - Word problem on inverse variation
  - Word problem on combined variation
- Chapter 5 Supplementary Topics
  - Complex fraction: Problem type 2
  - Word problem on inverse proportions
  - Sketching the graph of a rational function: Problem type 1

6-Radicals and Complex Numbers

- Section 6.1
  - Square root of a perfect square
  - Square root of a rational perfect square
  - Square root of a perfect square monomial
  - Pythagorean Theorem
  - Cube root of an integer
  - Domain of a square root function
- Section 6.2
  - Rational exponents: Basic

- [x] Rational exponents: Negative exponents and fractional bases
- [x] Rational exponents: Products and quotients
- [x] Rational exponents: Powers of powers
- [x] Converting between radical form and exponent form
- [x] Section 6.3
  - [x] Square root simplification
  - [x] Simplifying a radical expression: Problem type 1
  - [x] Simplifying a radical expression: Problem type 2
  - [x] Simplifying a higher radical: Problem type 1
  - [x] Simplifying a higher radical: Problem type 2
- [x] Section 6.4
  - [x] Square root addition
  - [x] Simplifying a sum of radical expressions
- [x] Section 6.5
  - [x] Square root multiplication
  - [x] Simplifying a product of radical expressions
  - [x] Simplifying a product of radical expressions using the distributive property
  - [x] Special products with square roots: Conjugates and squaring
  - [x] Simplifying products or quotients of higher index radicals with different indices
- [x] Section 6.6
  - [x] Rationalizing the denominator of a radical expression
  - [x] Rationalizing the denominator of a radical expression using conjugates
  - [x] Rationalizing the denominator of a higher index radical with variables
- [ ] Section 6.7
  - [ ] Solving an equation with radicals: Problem type 1 Unchecked since it is a topic in 10024
  - [ ] Solving an equation with radicals: Problem type 2
  - [ ] Solving an equation with radicals: Problem type 3
  - [ ] Solving an equation with radicals: Problem type 4
  - [ ] Solving an equation with a root index greater than 2
- [ ] Section 6.8
  - [ ] Using i to rewrite square roots of negative numbers
  - [ ] Simplifying a product or quotient involving roots of negative numbers
  - [ ] Adding and subtracting complex numbers
  - [ ] Multiplying complex numbers

- Dividing complex numbers
- Simplifying a power of i
- Chapter 6 Supplementary Topics
  - Simplifying a product of radical expressions: Advanced

7-Quadratic Equations and Functions

- Section 7.1
  - Even root property
  - Solving an equation with exponent using the even-root property
  - Completing the square
  - Solving a quadratic equation by completing the square
- Section 7.2
  - Solving a quadratic equation using the quadratic formula
  - Solving a quadratic equation with complex roots
  - Discriminant of a quadratic equation
  - Solving a word problem using a quadratic equation with irrational roots
- Section 7.3
  - Solving a rational equation that simplifies to a quadratic equation: Problem type 1
  - Solving a rational equation that simplifies to a quadratic equation: Problem type 2
  - Solving equations that can be written in quadratic form: Problem type 1
  - Solving equations that can be written in quadratic form: Problem type 2
- Section 7.4
  - Graphing a parabola: Problem type 2
  - How the leading coefficient affects the shape of a parabola
  - Writing an equation for a function after a vertical translation
  - Writing an equation for a function after a vertical and horizontal translation
- Section 7.5
  - Word problem using the maximum or minimum of a quadratic function
  - Graphing a parabola: Problem type 3
  - Finding the x-intercept(s) and the vertex of a parabola
- Section 7.6
  - Solving a rational inequality: Problem type 1
  - Solving a quadratic inequality written in factored form
  - Solving a quadratic inequality
- Chapter 7 Supplementary Topics
  - Range of a real-valued function

- Discriminant of a quadratic equation with parameter
- Odd root property
- Solving an equation with exponent using the odd-root property
- Solving an equation with positive rational exponent
- Solving an equation with negative rational exponent

-Exponential and Logarithmic Functions and Applications

- Section 8.1
  - Sum, difference, and product of two functions
  - Quotient of two functions
  - Composition of two functions: Basic
- Section 8.2
  - Horizontal line test
  - Inverse functions: Problem type 1
  - Inverse functions: Problem type 2
- Section 8.3
  - Solving a word problem using an exponential equation: Problem type 1
  - Sketching the graph of an exponential function: Basic
- Section 8.4
  - Converting between logarithmic and exponential equations
  - Evaluating a logarithmic expression
  - Sketching the graph of a logarithmic function: Basic
- Section 8.5
  - Basic properties of logarithms
  - Writing expressions as a single logarithm
- Section 8.6
  - Compound interest
  - Change of base for logarithms: Problem type 1
  - Sketching the graph of an exponential function: Advanced
- Section 8.7
  - Solving a logarithmic equation: Problem type 1
  - Solving a logarithmic equation: Problem type 2
  - Solving an exponential equation: Problem type 1
  - Solving an exponential equation: Problem type 2
  - Solving an exponential equation: Problem type 3

- Solving a word problem using an exponential equation: Problem type 2
- Solving a word problem using an exponential equation: Problem type 3
- Solving a word problem using an exponential equation: Problem type 4
- Chapter 8 Supplementary Topics
  - Change of base for logarithms: Problem type 2
  - Composition of two functions: Domain and range
  - Composition of two functions: Advanced
  - Sketching the graph of a logarithmic function
  - Translating the graph of a logarithmic or exponential function

9-Conic Sections

- Section 9.1
  - Midpoint of a line segment in the plane
  - Distance between two points in the plane
  - Graphing a circle given its equation in standard form
  - Graphing a circle given its equation in general form
  - Writing an equation of a circle given its center and a point on the circle
  - Writing an equation of a circle given the endpoints of a diameter
- Section 9.2
  - Graphing a parabola with a horizontal or a vertical axis
- Section 9.3
  - Graph of an ellipse centered at the origin
  - Graphing an ellipse given its equation in standard form
  - Graph of a hyperbola centered at the origin
  - Graphing a hyperbola given its equation in standard form
- Section 9.4
  - Solving a system of nonlinear equations
- Section 9.5
  - Graphing a quadratic inequality
  - Graphing a system of nonlinear inequalities: Problem type 1
  - Graphing a system of nonlinear inequalities: Problem type 2
- Chapter 9 Supplementary Topics
  - Writing an equation of a parabola given the vertex and the focus
  - Finding the focus of a parabola
  - Graphing an ellipse given its equation in general form
  - Graphing a hyperbola given its equation in general form

- Classifying conics given their equations

10-Binomial Expansions, Sequences, and Series

- Section 10.1
  - Factorial expressions
  - Binomial formula
- Section 10.2
  - Finding the first terms of a sequence
- Section 10.3
  - Arithmetic sequences
  - Sum of the first n terms of an arithmetic sequence
- Section 10.4
  - Geometric sequences
  - Sum of the first n terms of a geometric sequence
  - Sum of a geometric series

Caution: You may have removed too many lower-level topics from the course; this is not usually recommended.

For students who have not yet mastered lower-level topics, learning/reviewing these topics is essential for success in learning more advanced topics that are central to the course. We recommend that you put some of these topics back into the course, even though they are only review for the core topics.

The ALEKS Assessment determines the exact topics each student already knows, doesn't know, and is ready to learn. Only those students who need to work on a given topic will be asked to do so. Students who have already mastered topics (including prerequisite topics) will not be prompted to learn them again.

Save Cancel