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Finite Mathematics

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Alta Finite Mathematics was developed to meet the scope and sequence of a typical one-semester finite math course. To develop the course, Knewton used a variety of different source content, including OpenStax Calculus, a Math in Society textbook developed by a professor at Pierce College and the Open Course Library project, videos created by a Math Professor we have partnered with, 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 Finite Mathematics has two instructional sequences for every learning objective, giving students multiple opportunities to learn new concepts. Between our text, video, and Knewton SMEs, we were able to solicit ideas from math instructors and students at all levels of higher education. Alta Finite Mathematics covers the typical breadth of topics, and also provides the necessary depth to ensure the course is manageable and engaging for instructors and students alike.

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Finite Mathematics | Table of Contents

Chapter 1: Algebra Reference

1.1 Properties of Real Numbers and Polynomials

- Properties of Real Numbers
    - Use the following properties of real numbers: inverse and identity
    - Use the following properties of real numbers: commutative, associative, and distributive
- Polynomials
    - Add and subtract polynomials
    - Multiply binomials together
    - Multiply polynomials together
    - Perform operations with polynomials of several variables
- Properties of Real Numbers and Order of Operations
    - Distinguish between natural numbers, whole numbers, and integers
    - Distinguish between rational and irrational numbers
    - Perform calculations using order of operations
    - Use the following properties of real numbers: inverse and identity
    - Use the following properties of real numbers: commutative, associative, and distributive
- Evaluate and Simplify Algebraic Expressions
    - Evaluate algebraic expressions with a single variable
    - Evaluate algebraic expressions with two variables
    - Identify constants and variables
    - Use a formula
    - Simplify algebraic expressions

1.2 Factoring

- Factoring Quadratics
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    - Factor a trinomial
    - Factor a trinomial by grouping
    - Factor a perfect square trinomial
    - Factor a difference of squares
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    - Factor expressions using fractional or negative exponents
    - Factor expressions using greatest common factor and other technique

1.3 Rational Expressions

- Operations on Rational Expressions
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    - Multiply rational expressions

        - Divide rational expressions
        - Add and subtract rational expressions

1.4 Equations

- Linear Equations
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1.5 Inequalities

- Linear Inequalities
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    - Use properties of inequalities
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- Quadratic and Rational Inequalities
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Chapter 2: Linear Functions

2.1 Slopes and Equations of Lines

- Cartesian Coordinate System
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- Graphing Linear Equations
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2.2 Linear Functions and Applications

- Linear Functions
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    - Solve cost analysis problems using linear functions
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- Solving Linear Programming Problems Graphically
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- Transformations of Functions
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12.2 Regular Markov Chains

- Regular Transition Matrices and Stationary Matrices
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    - Find a stationary matrix for a given transition matrix
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12.3 Absorbing Markov Chains

- Absorbing States
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- Limiting Matrix
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