Syllabus

Integrated Math 3A

Course Overview

Integrated Math is a comprehensive collection of mathematical concepts designed to give you a deeper understanding of the world around you. It includes ideas from algebra, geometry, probability and statistics, and trigonometry, and teaches them as interrelated disciplines. It's likely that you've been studying some form of integrated math since elementary school.

In Integrated Math 3A, you will understand and work with polynomial expressions, including rational expressions. You will also examine the relationship between equations and functions and analyze trigonometric functions in detail.

Course Goals

This course will help you meet these goals:

- Simplify polynomial and rational expressions.
- Perform addition, subtraction, multiplication, and division with rational expressions.
- Prove and use polynomial identities.
- Apply the Binomial Theorem.
- Find common denominators in rational expressions.
- Factor algebraic expressions.
- Use synthetic division to divide polynomials.
- Examine graphs of polynomial functions.
- Derive a formula for the sum of a finite geometric series.
- Examine trigonometric functions and their graphs.

General Skills

To participate in this course, you should be able to do the following:

- Complete basic operations with word-processing software, such as Microsoft Word and Google Docs.
- Perform online research using various search engines and library databases.
- Communicate through email and participate in discussion boards.

For a complete list of general skills that are required for participation in online courses, refer to the Prerequisites section of the Plato Student Orientation document, found at the beginning of this course.

Credit Value

Integrated Math 3A is a 0.5-credit course.

Course Materials

- Notebook
- Computer with Internet connection and speakers or headphones
- Microsoft Word or equivalent
- Microsoft Excel or equivalent

Course Pacing Guide

This course description and pacing guide is intended to help you stay on schedule with your work. Note that your course instructor may modify the schedule to meet the specific needs of your class.

Unit 1: Polynomial, Rational, and Radical Relationships

Summary

In this unit, you will simplify rational and polynomial expressions. You will also learn about the polynomial identities and the Binomial Theorem and perform operations with rational expressions.

Day	**Activity**/*Objective*	Type
1 day: 1	**Syllabus and Plato Student Orientation** *Review the Plato Student Orientation and Course Syllabus at the beginning of this course.*	Course Orientation
2 days: 2–3	**Evaluating Rational Expressions** *Evaluate a rational expression for a given set of values.*	Lesson
2 days: 4–5	**Restrictions on Rational Expressions** *Identify nonpermissible values for the variables in the rational expression.*	Lesson
3 days: 6–8	**Equivalent Forms of Rational Expressions** *Identify rational expressions that are equivalent.*	Lesson
3 days: 9–11	**Simplifying Rational Expressions** *Simplify rational expressions.*	Lesson
3 days: 12–14	**Simplifying Polynomial Expressions** *Simplify polynomial expressions.*	Lesson
3 days: 15–17	**Polynomial Identities and the Binomial Theorem** *Prove and use polynomial identities and the Binomial Theorem.*	Lesson
3 days: 18–20	**Sum of Rational Expressions, Part 1** *Find the sum of rational expressions with like denominators.*	Lesson

3 days: 21–23	**Difference of Rational Expressions, Part 1** *Subtract rational expressions with like denominators.*	Lesson
3 days: 24–26	**Product of Rational Expressions** *Find the product of two rational expressions.*	Lesson
3 days: 27–29	**Unit Activity/Threaded Discussion—Unit 1**	Unit Activity
1 day: 30	**Posttest—Unit 1**	Assessment

Unit 2: Advanced Polynomial, Rational, and Radical Relationships

Summary

In this unit, you will perform further operations with rational and polynomial expressions. You will also simplify and factorize algebraic expressions and use synthetic division to divide polynomials.

Day	**Activity**/*Objective*	Type
3 days: 31–33	**Quotient of Rational Expressions** *Find the quotient of two rational expressions.*	Lesson
3 days: 34–36	**Common Denominators of Rational Expressions** *Find the least common denominator of two rational expressions.*	Lesson
3 days: 37–39	**Sum of Rational Expressions, Part 2** *Find the sum of two rational expressions with unlike denominators.*	Lesson
3 days: 40–42	**Difference of Rational Expressions, Part 2** *Find the difference of rational expressions with unlike denominators.*	Lesson
3 days: 43–45	**Simplifying Algebraic Expressions** *Simplify algebraic expressions by collecting like terms and following grouping symbols.*	Lesson
3 days: 46–48	**Review: Rational Expressions** *Review solving of rational expressions.*	Lesson
3 days: 49–51	**Rewriting Rational Expressions** *Rewrite rational expressions in different forms using multiple methods.*	Lesson
3 days: 52–54	**Factoring Algebraic Expressions** *Factor common algebraic expressions.*	Lesson
2 days: 55–56	**Dividing Polynomials Using Synthetic Division** *Divide polynomials using synthetic division.*	Lesson
3 days: 57–59	**Unit Activity/Threaded Discussion—Unit 2**	Unit Activity

1 day: 60	**Posttest—Unit 2**	Assessment

Unit 3: Equations and Functions

Summary

In this unit, you will explore various types of equations and graph polynomial functions. You will also develop formulas for the sums of finite geometric series.

Day	**Activity**/*Objective*	Type
3 days: 61–63	**Other Types of Equations** *Solve other types of equations, including those involving radicals and power functions.*	Lesson
3 days: 64–66	**Graphing Polynomial Functions** *Examine graphs of polynomial functions.*	Lesson
3 days: 67–69	**Finite Geometric Sums** *Derive and use the formula for the sum of a finite geometric series.*	Lesson
3 days: 70–72	**Unit Activity//Threaded Discussion—Unit 3**	Unit Activity
1 day: 73	**Posttest—Unit 3**	Assessment

Unit 4: Trigonometric Functions

Summary

In this unit, you will use a unit circle to understand trigonometric functions. You will then use these functions and their graphs to model and examine periodic phenomena.

Day	**Activity**/*Objective*	Type
2 days: 74–75	**Angles and Their Measures** *Examine angles and their measures.*	Lesson
3 days: 76–78	**Trigonometric Functions and the Unit Circle** *Examine trigonometric functions using a unit circle.*	Lesson
3 days: 79–81	**Trigonometric Functions** *Examine trigonometric functions.*	Lesson
3 days: 82–84	**Trigonometric Graphs** *Examine trigonometric graphs.*	Lesson
3 days: 85–87	**Unit Activity//Threaded Discussion—Unit 4**	Unit Activity

1 day: 88	**Posttest—Unit 4**	Assessment
1 day: 89	**Semester Review**	
1 day: 90	**End-of-Semester Test**	Assessment