Syllabus

TASC Preparation – Mathematics Part 1

Course Overview

The Test Assessing Secondary Completion (TASC) Preparation Courses were developed by aligning Plato Courseware with the strands and topics that are assessed on the 2014 TASC Test. Each unit aligns to one or more objectives within the 2014 TASC Test and the modules within each unit target the essential concepts of the Common Core State Standards as assessed on the TASC test. The 2014 TASC Test for Math is the study of both numerical and algebraic problem-solving skills. In this course, you will find a variety of lessons and activities to improve your knowledge and skills in these areas.

Course Goals

By the end of this course, you will:

- Understand the rules for exponents when the exponents are rational numbers.
- Explore the different types of operations that are possible for rational expressions including how to evaluate a rational expression for a given set of values.
- Understand how to simplify algebraic expressions.
- Explore the different operations with complex numbers including how to plot complex numbers in the complex number plane and the use of DeMoivre's theorem for finding roots of complex numbers.
- Explore polynomial functions and their graphs.
- Understand vector addition, vectors in a plane and how to represent situations and problems using vectors.
- Explore matrices and calculations using matrix operations.
- Understand how to add, subtract, multiply and divide monomials.
- Explore how to solve linear and quadratic equations and the process involved in graphing linear equations of two variables.
- Explore linear inequalities and how to solve systems of linear inequalities by graphing
- Explore linear graphs based on real-world situations and understand how to solve systems of linear equations including word problems.
- Understand how to use the product rule, quotient rule and power rule for exponents.
- Understand the concepts of point, slope, and intercept and explore how to determine the slope and intercept of a linear relationship, slope-intercept form and point-slope form.
- Explore monomial, binomial and polynomial expressions and their associated numerical operations.
- Explore parabola in terms of its x- and y-intercepts, vertex and how changing the coefficients of a parabola affects its position and shape.

- Understand graphs of absolute value functions.

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 or Google Docs.
- Complete basic operations with presentation software, such as Microsoft PowerPoint or Google Docs presentation.
- Perform online research using various search engines and library databases.
- Communicate through email.

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.

Course Materials

- notebook
- pencils or ink pens
- computer with Internet connection and speakers or headphones
- Microsoft Word or equivalent
- Microsoft PowerPoint or equivalent

Course Structure

Unit 1 - 3: Number and Quantity

Summary

Unit 1 begins by explaining the rules for exponents and then moves on to explore rational expressions. Students will learn to evaluate rational expressions and carry out different operations with rational expressions having like and unlike denominators.

Unit 2 includes lessons that demonstrate operations with algebraic expressions, complex numbers and polynomials. Students will learn how to graph complex numbers and polynomial functions. This unit also covers conversion of complex numbers to trigonometric forms and using DeMoivre's theorem for finding roots of complex numbers.

Unit 3 introduces vectors and applications of vectors to real-life problems. This unit also covers the terms used to describe matrices and their properties, as well as how to add and subtract matrices

Unit 4 - 9: Algebra

Summary

Unit 4 focuses on addition, subtraction, multiplication and division of monomials.

Unit 5 moves on to explore the process and concepts involved in solving linear equations and inequalities. Students will learn how to graph linear equations in two variables. The unit concludes by explaining how to solve for the slope-intercept and point-slope form of an equation, and the slope and intercept of a linear relationship from its graph.

Unit 6 shows students how to solve problems based on linear graphs that represent real-world situations. The unit also explores how to solve systems of linear equations and linear inequalities.

In Unit 7, students will explore how to simplify using the product rule, quotient rule and power rule for exponents. The unit moves on to explaining how to solve a system of equations by adding or subtracting. Students also learn to solve word problems using a system of two linear equations or inequalities.

Unit 8 includes lessons exploring the operations with monomial, binomials and polynomials. Students will learn how to write an expression using the distributive property and by grouping terms. The unit concludes with the study of quadratic equations.

In Unit 9, students learn how to find the x- and y-intercepts and vertex of a parabola. Students also study how changing the coefficients of a parabola affects its position and shape. Toward the end of the unit, students explore graphing absolute value functions