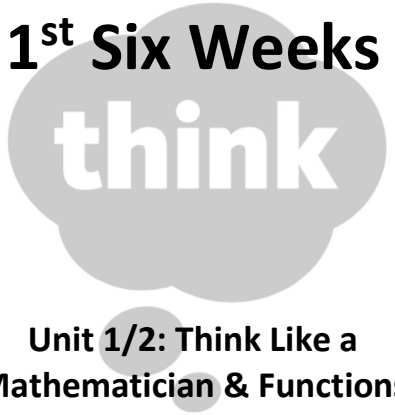
EAGLE MOUNTAIN SAGINAW ISD
Curriculum and Instruction

OnRamps Algebra 2 Parent Guide

1st Six Weeks



Unit 1/2: Think Like a Mathematician & Functions

Unit 1/2 Concepts:

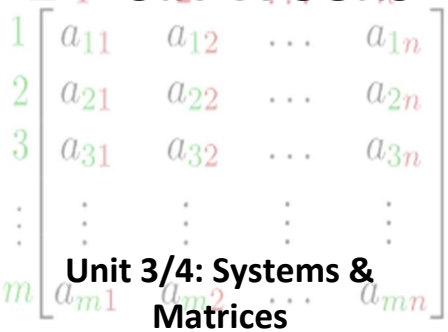
In units 1 and 2 students will identify the seven parent functions, identify function increase, and decrease, domain and range and graph using transformations. Students will be able to perform composition of functions and will work with absolute value equations. They will review linear functions and properties.

Learning Goals:

Students will use the definition of a function to determine if a given equation, table or graph represents a one. They will write linear functions in any form given different parts of the functions and will understand how to find inverses and compositions of functions.

Why? – Students will understand the basics of functions that will serve as the foundation for all future units. They will learn what it means to be a mathematician and see themselves as one by the end of the unit.

2nd Six Weeks



Unit 3/4: Systems & Matrices

Unit 3/4 Concepts:

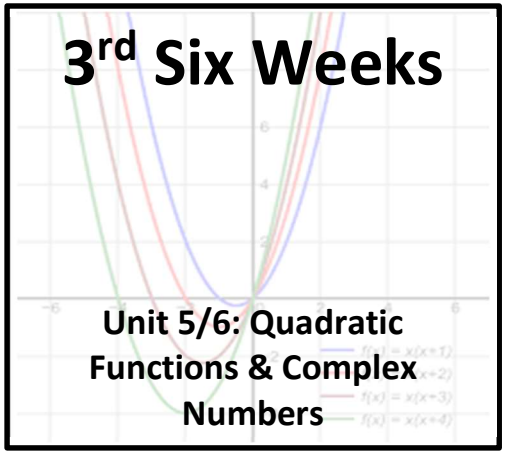
Unit 3 focuses on systems of equations including solving systems (linear and quadratic and inequalities), using systems to solve application problems, solving linear systems in three variables. Unit 4 covers matrix operations, inverse matrix, determinants, Cramer's Rule, Gaussian Elimination, and row echelon form.

Learning Goals:

Students will use systems of linear equations (with 2 and 3 variables) to solve problems graphically, using substitution and Gaussian Elimination. They will also solve systems with one linear equation and one quadratic equation and systems of inequalities. Students will understand how to add, subtract, and multiply matrices, find the multiplicative inverse of a matrix, and find the inverse of a matrix.

Why? – This unit will teach students to solve problems involving multiple variables.

3rd Six Weeks



Unit 5/6: Quadratic Functions & Complex Numbers

Unit 5/6 Concepts:

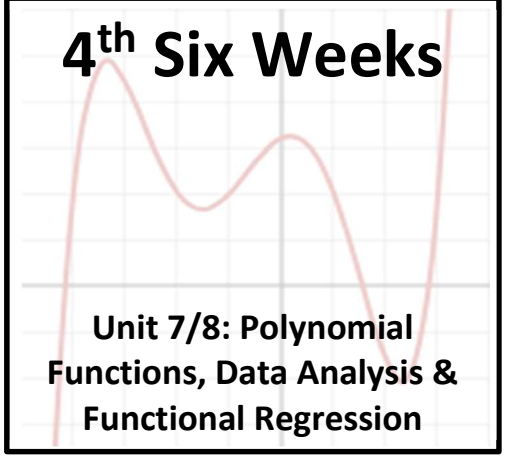
Student will study quadratics including factoring, the use of different forms of equations, transformations with graphing, word problems and conics. They will see complex numbers both algebraically and geometrically.

Learning Goals:

Students will learn how to recognize different patterns in polynomial functions to easily factor and how to graph quadratic functions from any form and convert a quadratic to vertex form by completing the square. Students will learn the quadratic formula to identify the discriminant, axis of symmetry and vertex of a quadratic along with finding the focus and directrix of a parabola. They will perform mathematical operations using complex numbers and learn the meaning and use of the modulus and complex conjugate of a complex number.

Why? – Students will understand quadratic functions and their solutions even when they are imaginary.

4th Six Weeks



Unit 7/8: Polynomial Functions, Data Analysis & Functional Regression

Unit 7/8 Concepts:

In unit 7, students study polynomial equations and expressions, utilizing various division and factoring techniques . In Unit 8 students will use modeling, data regression and function regression to solve problems.

Learning Goals:

Students will learn to factor degree three polynomials using special rules and graph polynomial functions by analyzing end behavior, multiplicity, symmetries, intercepts, and relative extrema. Students will use long and synthetic division to determine factors of a polynomial. They will find rational and real roots of a polynomial function by applying the Rational Zeros Theorem and they will study direct/indirect variation, piecewise functions and use technology to find statistical regressions of linear, exponential, and quadratic relationships.

Why? – This unit will teach students that polynomials are an important part of the "language" of math.

5th Six Weeks

Unit 9: Rational & Radical Functions

Unit 9 Concepts:

In this unit students will study radical and rational functions. They will perform operations, identify end behavior, asymptotes, and graph rational functions without the use of technology. Students will solve radical equations and identify extraneous solutions, graph using transformations, and apply radical function techniques.

Learning Goals:

Students will graph rational functions using x-intercepts, y-intercept, end behavior and discontinuities. They will use the Laws of Exponents to evaluate radical expressions and will graph radical functions by applying transformations to the parent function. They will identify domain, range and intercepts of radical functions given an equation or graph.

Why? – This unit will teach students how rational expressions are used for solving real-world problems.

6th Six Weeks

Unit 10/11: Exponential & Log Functions, Sequences & Series

Unit 10/11 Concepts:

In Unit 10, students study exponential and logarithmic functions and equations.

Learning Goals:

Students will simplify and evaluate expressions with exponents by applying laws of exponents and will simplify and evaluate expressions with logarithms by applying the properties of logs. They will graph exponential and log functions by applying transformations to the parent functions. Students will solve real world problems by using logarithmic and exponential functions. Given a sequence, students can determine if it is geometric, arithmetic or neither. They can find the sum of a finite geometric series and can perform binomial expansions by applying the binomial theorem.

Why? – This unit will teach students exponential and logarithmic functions are used to solve financial problems.

Questions? Please contact your OnRamps Algebra 2 teacher. **Additional Support:** We recommend Khan Academy and VarsityTutors.com and remember campus tutoring is also available.