

N-GEN MATH[®]

ALGEBRA II

BY KIRK WEILER

UNIT #1 – ESSENTIAL REVIEW 11

- Lesson 1 – Algebraic Expressions
- Lesson 2 – Additional Expression Work
- Lesson 3 – Equivalent Expressions
- Lesson 4 – Basic Exponent Review
- Lesson 5 – Multiplying Polynomials
- Lesson 6 – Linear Equation Solving Review
- Lesson 7 – Using Your Calculator to Explore Expressions and Equations
- Unit 1 – Essential Review – Unit Review

UNIT #2 – FUNCTIONS 45

- Lesson 1 – Introduction to Functions
- Lesson 2 – Function Notation
- Lesson 3 – Function Composition
- Lesson 4 – The Domain and Range of a Function
- Lesson 5 – Average Rate of Change
- Lesson 6 – Key Features of Functions
- Lesson 7 – One-to-One Functions
- Lesson 8 – Inverse Functions
- Lesson 9 – Even and Odd Functions
- Unit 2 – Functions – Unit Review



UNIT #3 – LINEAR FUNCTIONS 91

- Lesson 1 – Linear Change
- Lesson 2 – Forms of a Line
- Lesson 3 – Linear Modeling
- Lesson 4 – Inverses of Linear Functions
- Lesson 5 – Piecewise Linear Functions
- Lesson 6 – Linear Regression
- Unit 3 – Linear Functions – Unit Review

UNIT #4 – EXPONENTIAL FUNCTIONS 125

- Lesson 1 – Basic Exponent Properties
- Lesson 2 – Rational Exponents
- Lesson 3 – Exponential Function Basics
- Lesson 4 – Finding Equations of Exponential Functions
- Lesson 5 – The Method of Common Bases
- Lesson 6 – Exponential Modeling Based on Percent Growth and Decay
- Lesson 7 – More Exponential Modeling
- Lesson 8 – Compound Interest
- Lesson 9 – Horizontal Asymptotes of Exponential Functions
- Unit 4 - Exponential Functions – Unit Review

UNIT #5 – LOGARITHMIC FUNCTIONS 169

- Lesson 1 – Introduction to Logarithms
- Lesson 2 – Graphs of Logarithmic Functions
- Lesson 3 – The Logarithm Laws
- Lesson 4 – Solving Exponential Equations Using Logarithms
- Lesson 5 – The Number e and the Natural Logarithm
- Lesson 6 – More Work with e and the Natural Logarithm



UNIT #5 – LOGARITHMIC FUNCTIONS (CONTINUED) 169

- Lesson 7 – Exponential Regression
- Unit 5 – Logarithmic Functions – Unit Review

UNIT #6 – SEQUENCES AND SERIES 207

- Lesson 1 – Sequences
- Lesson 2 – Arithmetic and Geometric Sequences
- Lesson 3 – Summation Notation
- Lesson 4 – Arithmetic Series
- Lesson 5 – Geometric Series
- Unit 6 – Sequences and Series – Unit Review

UNIT #7 – QUADRATIC FUNCTIONS AND EQUATIONS 237

- Lesson 1 – Quadratic Function Review
- Lesson 2 – Factoring
- Lesson 3 – Factoring Simple Trinomials
- Lesson 4 – Factoring by Grouping
- Lesson 5 – Factoring Challenging Trinomials
- Lesson 6 – Solving Quadratic Equations by Completing the Square
- Lesson 7 – The Zero Product Law
- Lesson 8 – Linear-Quadratic Systems
- Lesson 9 – Modeling with Quadratic Functions
- Unit 7 – Quadratic Functions and Equations – Unit Review

UNIT #8 – TRANSFORMING FUNCTIONS 283

- Lesson 1 – Shifting Functions
- Lesson 2 – Vertically Stretching and Compressing Functions
- Lesson 3 – Horizontally Stretching and Compressing Functions



UNIT #8 – TRANSFORMING FUNCTIONS (CONTINUED) 283

- Lesson 4 – Reflecting Functions Across the Axes
- Lesson 5 – Working with Multiple Transformations
- Unit 8 – Transforming Functions – Unit Review

UNIT #9 – RADICALS AND COMPLEX NUMBERS 311

- Lesson 1 – Square Root and Cube Root Functions
- Lesson 2 – Solving Square Root Equations
- Lesson 3 – Fractional Exponents Revisited
- Lesson 4 – More Exponent Practice
- Lesson 5 – Solving Equations with Fractional Exponents
- Lesson 6 – Power Functions and Regression
- Lesson 7 – The Quadratic Formula
- Lesson 8 – Imaginary Numbers
- Lesson 9 – Complex Numbers
- Lesson 10 – Solving Quadratic Equations with Complex Solutions
- Unit 9 – Radicals and Complex Numbers – Unit Review

UNIT #10 – POLYNOMIAL AND RATIONAL FUNCTIONS 361

- Lesson 1 – Polynomial Expressions
- Lesson 2 – Factoring Polynomials
- Lesson 3 – Power Functions and Polynomials
- Lesson 4 – Graphs of Polynomial Functions
- Lesson 5 – The Zeros of a Polynomial Function
- Lesson 6 – Rational Functions
- Lesson 7 – Simplifying Rational Expressions
- Lesson 8 – Polynomial Division
- Lesson 9 – The Remainder Theorem



UNIT #10 – POLYNOMIAL AND RATIONAL FUNCTIONS (CONTINUED) 361

- Lesson 10 – Adding and Subtracting Rational Expressions
- Lesson 11 – Solving Rational Equations
- Lesson 12 – Modeling with Rational Functions, Equations, and Inequalities
- Lesson 13 – Reasoning About Rational and Radical Equations
- Unit 10 – Polynomial and Rational Functions – Unit Review

UNIT #11 – TRIGONOMETRIC FUNCTIONS 425

- Lesson 1 – Rotations and Angle Terminology
- Lesson 2 – Radian Angle Measurement
- Lesson 3 – The Unit Circle
- Lesson 4 – Defining the Sine and Cosine Functions
- Lesson 5 – Working with Sine and Cosine Using Radians
- Lesson 6 – Basic Graphs of the Sine and Cosine Functions
- Lesson 7 – The Midline of a Trigonometric Function
- Lesson 8 – The Frequency and Period of Trigonometric Graphs
- Lesson 9 – Horizontal Shifts of Trigonometric Functions
- Lesson 10 – Determining the Equations of Trigonometric Functions
- Lesson 11 – Modeling Using the Sine and Cosine Functions
- Lesson 12 – The Tangent Function
- Lesson 13 – More Work with the Tangent Function
- Lesson 14 – The Reciprocal Trigonometric Functions
- Unit 11 – Trigonometric Functions – Unit Review

UNIT #12 – PROBABILITY 495

- Lesson 1 – Probability Basics
- Lesson 2 – Sets and Probability
- Lesson 3 – Adding Probabilities



UNIT #12 – PROBABILITY (CONTINUED) 495

- Lesson 4 – Conditional Probability
- Lesson 5 – Independent Events
- Unit 12 – Probability – Unit Review

UNIT #13 – STATISTICS 521

- Lesson 1 – Variability and Sampling
- Lesson 2 – Population Parameters
- Lesson 3 – The Normal Distribution
- Lesson 4 – Making Inferences – Day 1
- Lesson 5 – Making Inferences – Day 2
- Lesson 6 – Making Inferences – Day 3
- Unit 13 – Statistics – Unit Review

Total Lesson Count = 105 Lessons

