



Advanced Algebra Concepts and Connections

Unit 2: Exponential and Logarithmic Functions



Overview:

In this unit, students will explore exponential and logarithmic functions. Students will simplify and evaluate exponential expressions with rational and irrational exponents and graph exponential functions. Additionally, students will learn what inverse functions are, how to find inverse functions, and different methods to verify them, like composing functions, in order to explore logarithm functions as inverse of exponential functions. Furthermore, students will model real-world situations using common and natural logarithms.

Learning Targets:

In Unit 2, students will:

- Find the inverse of exponential and logarithmic functions using equations, tables, graphs, limiting the domain of inverse where necessary to maintain functionality, and prove by composition or verify by inspection that one function is the inverse of another
- Analyze, graph, and compare exponential and logarithmic functions
- Use the definition of a logarithm, logarithmic properties, and the inverse relationship between exponential and logarithmic functions to solve problems in context
- Create exponential equations and use logarithms to solve contextual problems for which only one variable is unknown
- Create and interpret logarithmic equations in one variable and use them to solve problems
- Create, interpret, and solve exponential equations to represent relationships between quantities and analyze the relationships numerically with tables, algebraically, and graphically
- Create, interpret, and solve logarithmic equations in two or more variables to represent relationships between quantities

Key Vocabulary: (linked to GA DOE Interactive Glossary)

Antilogarithm

Common Logarithm

Compounding

Doubling Time

Euler's Number

Exponential Decay

Exponential Growth

Natural Logarithm

One-to-One Functions

Supporting Resources:

<http://ctlslearn.cobbk12.org/>

<https://gavirtual.instructure.com/courses/34342>

[Exponential Functions](#)

[Introduction to Logarithms](#)

[Inverse Functions](#)

[Function Composition](#)

[Visual Exponential Function](#)

[Logarithm Properties](#)