

Curriculum Units and Learning Outcomes

Content Area: Algebra II	Grade Level: 11
Unit Title: Exponential Functions	
Unit Summary: Analyze and model exponential function situations to formulate and equations and solve the problem both graphically and algebraically. Solving exponential with the same base. Use exponents to model compound interest problems, as well as growth and decay applications.	
Massachusetts Standards: ● AII.A-CED A. Create equations that describe numbers or relationships. ○ 1.Create equations and inequalities in one variable and use them to solve problems. Include equations arising from simple root and rational functions and exponential functions. ○ 2.Create equations in two or more variables to represent relationships between quantities; graph equations on coordinate axes with labels and scales. ○ 3.Represent constraints by equations or inequalities, and by systems of equations and/or inequalities, and interpret solutions as viable or non-viable options in a modeling context. ● AII.F-BF A. Build a function that models a relationship between two quantities. ○ 1.Write a function (simple rational, radical, logarithmic, and trigonometric functions) that describes a relationship between two quantities. ■ b.Combine standard function types using arithmetic operations ● AII.B-CEDA. Create equations that describe numbers or relationships. ○ 1.Create equations and inequalities in one variable and use them to solve problems. Include equations arising from simple root and rational functions and exponential functions. ○ 2.Create equations in two or more variables to represent relationships between quantities; graph equations on coordinate axes with labels and scales. ○ 3.Represent constraints by equations or inequalities, and by systems of equations and/or inequalities, and interpret solutions as viable or non-viable options in a modeling context.	

Enduring Understandings: Students will understand that:

- Exponential functions are used to model biologic and economic growth and decay.

Essential Questions:

- How do exponential functions apply to real life?
- How can I solve problems that involve exponents?

Students will demonstrate KNOWLEDGE of:

- Identify an exponential growth (or decay) problem given an equation, a graph, and/or application
- Identify when two functions are inverses given a graph and/or equation
- An exponent symbolizes repeated multiplication

Students will be SKILLED at:

- Graphing an exponential using a table of values
- Evaluating an exponential
- Solving an exponential equation using a graph
- Modeling a word problem using exponential growth (or decay)
- Simplifying an exponential expression

Estimated Duration: 4 weeks