

## Algebra II Curriculum Bundle #7

Title	Suggested Dates
Exponential and Logarithmic Functions	January 5 – January 29 (18 days)



Big Idea/Enduring Understanding	Guiding Questions
<p>Real world applications involving growth can be modeled using a linear growth model or exponential growth models.</p>	<ol style="list-style-type: none"> <li>1. When data increases/decreases by a constant rate, can that data be modeled by an exponential growth/decay model?</li> <li>2. What type of function can be used to model medicine leaving the body's blood stream? And why?</li> <li>3. How can you determine how long it will take an amount of deposited money to double? Triple? Quadruple?</li> <li>4. What is the average growth rate and proportional growth rate for a set of data?</li> <li>5. Using each model, what do you predict will happen in the future, and which model is best for the particular situation- why?</li> <li>6. How do parameter changes affect the graph of an exponential function?</li> <li>7. How can the properties of exponents be used to simplify expressions?</li> </ol>

The resources included here provide teaching examples and/or meaningful learning experiences to address the District Curriculum. In order to address the TEKS to the proper depth and complexity, teachers are encouraged to use resources to the degree that they are congruent with the TEKS and research-based best practices. Teaching using only the suggested resources does not guarantee student mastery of all standards. Teachers must use professional judgment to select among these and/or other resources to teach the District Curriculum.

Knowledge & Skills with Student Expectations	District Specificity/Examples	Suggested Resources (See note above)
<p><b>2A.11 Exponential and Logarithmic Functions.</b> The student formulates equations and inequalities based on exponential and logarithmic functions, uses a variety of methods to solve them, and analyzes the solutions in terms of the situation.</p> <p>2A.11A The student develops the definition of logarithms by exploring and describing the relationship between exponential functions and their inverses.</p>	<ul style="list-style-type: none"> <li>• Using the calculator to explore exponential relationships and their inverses</li> <li>• Convert expressions from exponential form to logarithmic form and vice versa</li> <li>• Know that the exponential function and logarithmic functions are reflections about the line <math>y = x</math></li> </ul>	<p><b>Text Algebra II</b> Holt, Reinhart, Winston 7-3 Logarithmic Function p. 505-511 7-1 Exponential Growth and Decay p. 490-496</p> <p><b>Discovery Advanced Algebra</b> Key Curriculum Press 5-5 Building Inverses of Functions p. 266-272</p>

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<p><b>2A.11 Exponential and Logarithmic Functions.</b> The student formulates equations and inequalities based on exponential and logarithmic functions, uses a variety of methods to solve them, and analyzes the solutions in terms of the situation.</p> <p>2A.11D The student determines solutions of exponential and logarithmic equations using graphs, tables, and algebraic methods.</p>	<ul style="list-style-type: none"> <li>• Finding roots on a graph on the calculator (optional)</li> <li>• Finding zeros in a table with and without a calculator (optional)</li> <li>• Use inverse properties to solve exponential and logarithmic equations.</li> <li>• Know the change of base formula</li> <li>• Solve log problems that are not in base ten</li> <li>• Use log and exponential properties to solve problems</li> </ul>	<p><b>Texas Algebra II</b> Holt, Rinehart &amp; Winston</p> <p>Section 7-5 Exponential &amp; Logarithmic Equations and Inequalities Pg. 522-528</p> <p><b>Discovering Advanced Algebra</b> Key Curriculum Press Supplemental Lesson 1 Pg. 11-16</p>	<p><b>A&amp;M Curriculum</b> Spring Section 2-3 through 2-5 Solving Log Equations</p> <p><b>Laying the Foundation, Connecting Algebra 2 to Advanced Placement Mathematics</b> “Discovering the Natural Log Function” pp. 310 – 315 “Exponential and Natural Logarithmic Functions” pp. 316 – 323 “Solving Systems of Exponential, Logarithmic, and Linear Equations” pp. 342 - 347 “Linearization of Exponential Data” pp. 348 - 359</p>
<p><b>2A.11 Exponential and Logarithmic Functions.</b> The student formulates equations and inequalities based on exponential and logarithmic functions, uses a variety of methods to solve them, and analyzes the solutions in terms of the situation.</p> <p>2A.11E The student determines solutions of exponential and logarithmic inequalities using graphs and tables.</p>	<ul style="list-style-type: none"> <li>• Graph with a graphing calculator</li> <li>• Find zeros/x-intercepts using a graph or table</li> <li>• Write solutions as inequalities</li> <li>• Understand solutions to logarithmic and exponential inequalities are infinite</li> </ul>	<p><b>Texas Algebra II</b> Holt, Rinehart &amp; Winston Section 7-8 Curve Fitting with Exponential &amp; Logarithmic Models Pg. 545-551</p> <p><b>Discovering Advanced Algebra</b> Key Curriculum Press Supplemental Lesson 2 Pg. 17-23</p>	

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