

Algebra II Curriculum Bundle #6



Title	Suggested Dates
Inverse Functions and Logs	December 7 – December 18 (10 days)

Big Idea/Enduring Understanding	Guiding Questions
<p>Inverse functions are “undoing” functions. A logarithmic function is the inverse of an exponential function, so a log “undoes” an exponent, just as subtraction undoes addition or division undoes multiplication.</p>	<ol style="list-style-type: none"> 1. How many ways can you determine if two functions are inverses of each other? 2. How can composition of functions help to determine if two functions are inverses? 3. Do inverse functions involve symmetry? 4. What is the relationship between logarithmic functions and exponential functions? 5. How are the properties of logarithms related to the properties of exponents? 6. How can you rewrite a logarithmic expression as an exponential expression and vice versa? 7. What is e, how is it different in comparison to base 10?
<p>Logarithms can be used to model real life situations such as measuring financial growth, intensity of earthquakes, and the scale to zoom in on Google Earth.</p>	<ol style="list-style-type: none"> 1. How can logarithmic functions help us to determine the intensity of an earthquake? 2. How can logarithmic functions and natural logs be used to find out when investments will double, triple? 3. What type of function can be used to measure the zoom used on Google Earth?

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>2A.4 Algebra and Geometry. The student connects algebraic and geometric representations of functions.</p> <p>2A.4C The student describes and analyzes the relationship between a function and its inverse.</p>	<ul style="list-style-type: none"> • Analyze the change in the domain and range of the inverse of a function (reflection over $y = x$). • Analyze whether the inverse is a function (use the horizontal line test for the inverse and the vertical line test for the original function). • Use verbal description, table, graph, and algebraic representation to determine if functions are inverses. 	<p>Text Algebra II Holt, Reinhart, Winston 7-2 Lab Explore Inverses of Functions p. 497 7-2 Inverses of Relations and Functions p. 498 1-6 Relations and Functions p. 44-50</p>	<p>A&M Curriculum Spring 1-2 Verifying Inverses</p> <p>Laying the Foundation, Connecting Algebra 2 to Advanced Placement Mathematics “Composition of Functions”</p>

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	<ul style="list-style-type: none">• Find the inverse by exchanging the x and y of ordered pairs• Exchange the independent and dependent variables to derive the equation of the inverse• Define one-to-one correspondence and connect the concept to the graph of a relation and its inverse (horizontal line test); predict if the relations or function will have an inverse that is a function• Determine if $f(x)$ and $g(x)$ are inverse functions by proving algebraically, by using compositions of functions, that $f(g(x)) = g(f(x)) = x$.	<p>Discovery Advanced Algebra Key Curriculum Press 5-6 Logarithmic Functions p. 273-278 5-4 Applications of Exponential and Power Equations p. 261- 265</p>	<p>Graphically” Pg. 116-118</p> <p>“Composition of Functions” Pg. 120-129</p> <p>“Composition of Functions Exploration” Pg. 130-135</p> <p>“Graphing Compositions of Functions” Pg. 136-143</p>
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