

HPISD Curriculum: Pre Calculus Pre-AP

Title		Estimated Duration	6 Weeks					
Unit 10: Exponents and Logarithms		12 days	1	2	3	4	5	6
Unit Overview								
Exponents and Logarithms								
Generalizations/Enduring Understandings								
The student will understand that:	<ul style="list-style-type: none"> Exponential functions and logarithmic functions are inverses of each other. Exponential functions and logarithmic functions can be used to solve real world problems. 							
Concepts		Guiding/Essential Questions						
<ul style="list-style-type: none"> Exponents Logarithms 		<ul style="list-style-type: none"> How can an exponential function be changed into a logarithmic function and vice-versa? What kind of problems can be solved by exponential and logarithmic functions? 						
Learning Targets								
<ul style="list-style-type: none"> Students will analyze the relationship between exponential and logarithmic functions and utilize the function's properties to solve problems. 								
Formative Assessments					Summative Assessments			

TEKS:	Processes and Skills: What students should be able to DO	Facts: What students should KNOW
<p>Graph exponential, logarithmic, rational, polynomial, power, trigonometric, inverse trigonometric and piecewise defined functions, including step functions. P.2.F</p> <p>Graph functions, including exponential, logarithmic, sine, cosine, rational, polynomial, and power functions and their transformations, including $af(x)$, $f(x)+d$, $f(x-c)$, $f(bx)$ for specific values of a, b, c, and d, in mathematical and real-world problems. P.2.G</p> <p>Determine and analyze the key features of exponential, logarithmic, rational, polynomial, power, trigonometric, inverse trigonometric, and piecewise defined functions, including step functions such as domain, range, symmetry, relative maximum, relative minimum, zeros, asymptotes, and intervals over which the function is increasing or decreasing. P.2.I</p> <p>Analyze and describe end behavior of functions, including exponential, logarithmic, rational, polynomial, and power functions using infinity notation to communicate this characteristic in mathematical and real-world problems. P.2.J</p> <p>Analyze situations modeled by functions, including exponential, logarithmic, rational, polynomial, and power functions, to solve real-world problems such as problems involving growth and decay and optimization. P.2.N</p> <p>Use the properties of logarithms to evaluate or transform logarithmic expressions. P.5.G</p> <p>Generate and solve logarithmic equations in mathematical and real-world problems. P.5.H</p> <p>Generate and solve exponential equations in mathematical and real-world problems. P.5.I</p>	<ul style="list-style-type: none"> • Transform a logarithmic function to an exponential function and vice-versa. • Graph exponential and logarithmic functions. • Solve real-world problems with exponential and logarithmic functions. • Change the base of a logarithmic function. • Use exponential laws and laws of logarithms to rewrite equations and solve problems. 	<ul style="list-style-type: none"> • The change of base formula allows a logarithmic function's base to be changed; the formula is: $\log_b x = \frac{\log_a x}{\log_a b}$ • All exponential functions have a horizontal asymptote and all logarithmic functions have a vertical asymptote.

Topics	
Exponents and Logarithms	
Language of Instruction	
change of base formula exponential growth and decay	
State Assessment Connections	National Assessment Connections
Resources	