

Exponential Functions

Curriculum Expectations

By the end of this course, students will:

- graph exponential relations, and explain why they are functions
- determine the value of a power with a rational exponent
- simplify algebraic expressions containing integer and rational exponents, and evaluate numeric expressions containing integer and rational exponents and rational bases
- determine and describe key properties relating to domain and range, intercepts, increasing/decreasing intervals, and asymptotes for exponential functions represented in a variety of ways
- distinguish exponential functions from linear and quadratic functions by making comparisons in a variety of ways
- determine the roles of the parameters a , b , c , and d in functions of the form $y = af(b(x-c)) + d$, where f is an exponential function, and describe these roles in terms of transformations
- sketch graphs of exponential functions by applying one or more transformations, and state the domain and range of the transformed functions
- determine that the equation of a given exponential function can be expressed using different bases
- represent an exponential function with an equation, given its graph or its properties
- identify exponential functions, including those that arise from real-world applications involving growth and decay, given various representations, and explain any restrictions on the domain and range
- solve problems using given graphs or equations of exponential functions arising from a variety of applications

Schedule of Topics

Day	Topic	Homework	Questions?
1	Exponent Laws (inc. Negative/Zero Exponents)	Worksheet	
2	Rational Exponents	Worksheet	
3	Change of Base	Worksheet	
4	Solving Exponential Equations	Worksheet	
5	Properties of Exponential Functions	p.185 #1-5,7,10	
6	Transformations of Exponential Functions	p.196 #1-8,13,14	
7,8	Applications of Exponential Functions	Worksheets	
9	Review	pp.210-211 #1-13	

Assessment and Evaluation

Quiz/Test/Task	Date	K	A	T	C

Skills Checklist

At the end of this strand, I am able to:

- | | | | |
|--|---------------------------------|--------------------------------|---------------------------------|
| • Simplify and evaluate expressions involving integral exponents | <input type="checkbox"/> Always | <input type="checkbox"/> Often | <input type="checkbox"/> Seldom |
| • Simplify and evaluate expressions involving rational exponents | <input type="checkbox"/> Always | <input type="checkbox"/> Often | <input type="checkbox"/> Seldom |
| • Convert expressions between exponential and radical forms | <input type="checkbox"/> Always | <input type="checkbox"/> Often | <input type="checkbox"/> Seldom |
| • Express values/exponential expressions using different bases | <input type="checkbox"/> Always | <input type="checkbox"/> Often | <input type="checkbox"/> Seldom |
| • Simplify expressions involving exponents by changing base | <input type="checkbox"/> Always | <input type="checkbox"/> Often | <input type="checkbox"/> Seldom |
| • Solve exponential equations by changing base | <input type="checkbox"/> Always | <input type="checkbox"/> Often | <input type="checkbox"/> Seldom |
| • Solve exponential equations by factoring | <input type="checkbox"/> Always | <input type="checkbox"/> Often | <input type="checkbox"/> Seldom |
| • Solve exponential equations via “guess-and-check” | <input type="checkbox"/> Always | <input type="checkbox"/> Often | <input type="checkbox"/> Seldom |
| • Describe key properties of the graphs of exponential functions | <input type="checkbox"/> Always | <input type="checkbox"/> Often | <input type="checkbox"/> Seldom |
| • Describe transformations applied to exponential functions | <input type="checkbox"/> Always | <input type="checkbox"/> Often | <input type="checkbox"/> Seldom |
| • Graph exponential functions, given appropriate information | <input type="checkbox"/> Always | <input type="checkbox"/> Often | <input type="checkbox"/> Seldom |
| • Determine equations of exponential functions from information | <input type="checkbox"/> Always | <input type="checkbox"/> Often | <input type="checkbox"/> Seldom |
| • Determine equations of exponential functions from a graph | <input type="checkbox"/> Always | <input type="checkbox"/> Often | <input type="checkbox"/> Seldom |
| • Solve applications involving exponential functions | <input type="checkbox"/> Always | <input type="checkbox"/> Often | <input type="checkbox"/> Seldom |
| • Develop models for situations involving exponential functions | <input type="checkbox"/> Always | <input type="checkbox"/> Often | <input type="checkbox"/> Seldom |

Student Comments

Parent/Guardian Comments

Teacher Comments