Topic: Grade:

Piecewise, Exponential, and Inverses

Unit 5

Math 2

Student Learning Map

Key Learning(s): Unit Essential Question(s):

**Optional Instructional Tools:**

How do you determine the characteristics of piecewise and exponential functions?

What makes a functions’ inverse also a function?

Graphing and describing the piecewise and exponential functions along with discovering the inverses of these functions and others.

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| Concept : | Concept: | Concept: |
| Piecewise | Exponential | Inverses |
| Lesson Essential Question(s):  How are piecewise functions used  to identify situations in everyday life?  How can piecewise functions be described?  How do I identify points of  discontinuity in piecewise functions?  How do I graph a greatest integer function?  How do I determine if a piecewise  function is a floor function?  How are graphs of step functions  used in everyday life?  How do I determine if a piecewise  function is a ceiling function? | Lesson Essential Question(s):  How do you use properties of exponents  to simplify algebraic expressions?  How do you use the properties of exponents to solve exponential equations and inequalities?  How do transformations of exponential equations affect the function analytically  and graphically?  How do exponential functions relate  to real world phenomena?  How do Geometric Sequences  relate to exponential functions?  How do we use the common ratio in a Geometric sequence with exponential functions? | Lesson Essential Question(s):  What are the characteristics of  functions and their inverses?  How do I determine the inverse of linear  and quadratic functions?  How do I determine the inverses  of power functions?  What are the characteristics of functions and their inverses, and how do you find the inverse of linear, quadratic and power functions?  How do I graph functions and their inverses applying the line tests and determining one-to-one?  What is the relationship between the domain and range of a function and its inverse?  How do I find the composition of functions?  How do I use composition of functions to verify that functions are inverses of each other?  How will students explore  inverses of functions? |
| Vocabulary:  Piecewise Function  Points of Discontinuity  Step Function | Vocabulary:  Exponential Function  Exponential Growth Function  Growth Factor  Exponential Decay Function  Decay Factor  Exponential Equation  Power Function  Sequence  Terms  Series  Summation Notation (Sigma Notation)  Arithmetic Sequence  Common Difference  Arithmetic Series  Geometric Sequence  Common Ratio  Geometric Series | Vocabulary:  One-to-One  Composition  Inverse Relation  Inverse Function  nth root of a |