MA2A1. Students will explore exponential functions.
   a. Extend properties of exponents to include all integer exponents.
   b. Investigate and explain characteristics of exponential functions, including domain and range, asymptotes, zeros, intercepts, intervals of increase and decrease, rates of change, and end behavior.
   c. Graph functions as transformations of $f(x) = a^x$.
   d. Solve simple exponential equations and inequalities analytically, graphically, and by using appropriate technology.
   e. Understand and use basic exponential functions as models of real phenomena.
   f. Understand and recognize geometric sequences as exponential functions with domains that are sets of whole numbers.
   g. Interpret the constant ratio in a geometric sequence as the base of the associated exponential function.

MA2A4. Students will explore logarithmic functions as inverses of exponential function.
   c. Define logarithmic functions as inverses of exponential functions.
   d. Understand and use properties of logarithms by extending laws of exponents.
   e. Investigate and explain characteristics of exponential and logarithmic functions including domain and range, asymptotes, zeros, intercepts, intervals of increase and decrease, and rate of change.
   f. Graph functions as transformations of $f(x) = a^x, f(x) = \log_a x, f(x) = e^x, f(x) = \ln x$.
   g. Explore real phenomena related to exponential and logarithmic functions including half-life and doubling time.

Mon	Sept 24	8.1 & 8.2	Exponential Growth and Decay Functions	P 469	21 – 42 M3, 56 – 64 all
				P477	12 – 42 M3, 43 – 46 all
Tue	Sept 25	8.3	Vocabulary Due	P 483	18 – 66 all
Wed	Sept 26		Journal Due \ The Number e \ Application Problems		68 – 76 even
Thur	Sept 27	8.4	Introduce Logarithmic Functions	P 490;	16 – 54 even
Fri	Sept 28	8.4	8.1 – 8.3 Quiz \ Graph Logarithmic Functions	Page 491	56 – 76 even
Mon	Oct 1	8.5	Properties of Logarithms	Page 496	14 – 72 even
Tue	Oct 2	8.6	Properties of Logarithms		
Wed	Oct 3	4.7	Solving Exponential and Logarithmic Equations	Page 505	20 – 60 even

Thur	Oct 4	4.8	Solve exponential and Logarithmic Inequalities		Handout
Fri	Oct 5		Quiz 8.4 – 8.6		
Mon	Oct 8		Review for Unit Test		
Tue	Oct 9		Chapter 8 Unit Test Essential Questions Due Notebook Check		

Essential Questions

1. How are exponential growth functions graphed? Give one example.
2. How are exponential decay functions graphed? Give one example.
3. How is *e* used as the base of an exponential function? Give 2 examples.
4. How are logarithmic functions evaluated? Give 2 examples.
5. How are logarithmic functions graphed? Give 1 example.
6. What are the three properties of logarithms? Give an example of each.
7. What is the change-of-base formula? Give an example of how to use it.
8. How are exponential equations solved? Give one example.
9. How are logarithmic equations solved? Give one example.
10. How are logistic growth functions evaluated? Give one example.

Vocabulary

- Exponential Growth Function
- Exponential Growth Model
- Half-life
- Exponential Decay Model
- Base
- Asymptote
- Growth Factor
- Exponential Decay Function
- Decay Factor
- Natural Base
- Logarithm of *y* with base *b*
- Common Logarithm
- Natural Logarithm
- Continuously Compounded Interest
- Logarithmic Function
- Average rate of change
- Properties of Logarithms
- Property of Equality for Exponential Functions
- Property of Equality for Logarithmic Equations

- Exponential inequality in one variable
- Logarithmic inequality in one variable