Foundations of Math 12 LG 15-16

Exponential and Logarithmic Functions

INTRODUCTION:

Exponential functions are often used by scientists who are studying the natural growth of a material or organism. The graph of an exponential function displays this growth quite well. On the other hand, a logarithmic function can be used to model growth in other areas. Completing the material in this guide will demonstrate how exponential and logarithmic functions are related.

LEARNING GUIDE EXPECTATIONS:

On the completion of this learning guide you will be able to:

1) Graph and describe the properties of exponential functions.
2) Relate the characteristics of exponential functions to its equation.
3) Model data using exponential equations.
4) Graph and describe the properties of log functions with base 10 and e.
5) Model data using log functions.

EVALUATION:

Complete the LG 15-16 quiz.

RESOURCES NEEDED:

Foundations of Mathematics 12 Text.

LEARNING ACTIVITIES:

Expectation #1: Graph and describe the properties of exponential functions.

1. Watch and take notes on instructional video on Exploring the Characteristics of Exponential Functions.

2. In the Foundations of Mathematics 12 text, in Section 7.1 read "Explore the Math" on pages 436-437.
3. Read "In Summary" on page 438.
4. Complete #1, 2, 3 on page 439.

Expectation #2: Relate the characteristics of exponential functions to its equation.

1. Watch and take notes on instructional video on Relating the Characteristics of an Exponential Function to its Equation.
2. In the Foundations of Mathematics 12 text, in Section 7.2 work through Examples 1-3 on pages 442-447.
3. Read "In summary" on page 448.
4. Complete #1, 2, 3, 4, 5, 7, 8, 10, 11, 13, 14, and 18 on pages 448-452.

Expectation #3: Model data using exponential equations.

1. Watch and take notes on instructional video on Modelling Data Using Exponential Functions.
2. In the Foundations of Mathematics 12 text, in Section 7.3 work through Examples 1-2 on pages 455-460.
3. Read "In Summary" on page 460.
4. Complete #1, 2, 3, 5, 6, 8, 12, 14, 15, and 16 on pages 461-466.

Expectation #4: Graph and describe the properties of log functions with base 10 and e.

1. Watch and take notes on instructional video on Characteristics of Log Functions with base 10 and base e.
2. In the Foundations of Mathematics 12 text, in Section 7.4 read "Investigate the Math" on pages 474-476.
3. Work through Examples 1-3 on pages 476-480.
4. Read "In Summary" on page 481.
5. Complete #1, 2, 3, 4, 5, 6, 8, 10, 12, 13, and 14 on pages 482-486.

Expectation #5: Model data using log functions.

1. Watch and take notes on instructional video on Modelling Data Using Log Functions.
2. In Section 7.5, work through Examples 1-2 on pages 489-493.
3. Read "In Summary" on page 494.
4. Complete #1, 2, 3, 4, 6, 7, 8, and 11 on pages 494-499.

REVIEW

Now that you have completed some practice questions, you could review by doing any of the following:

- Chapter Self-Test on page 501.
- Practicing on pages 504-505.
- LG 15-16 practice quizzes located here.

Once you are ready, email your teacher for the LG 15-16 quiz.