Foundations of Math 12 LG 17-18

Sinusoidal Functions

INTRODUCTION:

Any object that bounces, rotates, or moves with a wave type motion is said to have a sinusoidal pattern. The engine of a car, electricity passing through your house, and radio signals being received by your mobile device all examples of sinusoidal waves. It can be very useful to understand the patterns to sinusoidal waves as they can be used to predict a future event in the cycle that will allow the person the ability to adjust for this event. In a car, this is called giving the car a tune up. Completing the material in this guide will help you understand the patterns for sine and cosine graphs.

LEARNING GUIDE EXPECTATIONS:

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

1) Understand degree and radian methods of measuring angles.
2) Describe the properties of sinusoidal functions.
3) Graph sinusoidal functions.
4) Determine the characteristics of a sinusoidal function from its equation.
5) Model data with a sinusoidal function.

EVALUATION:

Complete the LG 17-18 quiz.

RESOURCES NEEDED:

Foundations of Mathematics 12 Text.

LEARNING ACTIVITIES:

Expectation #1: Understand degree and radian methods of measuring angles.

1. Watch and take notes on instructional video on Understanding Angles.
2. In the Foundations of Mathematics 12 text, in Section 8.1 read "Investigate the Math" on pages 514.
3. Work through Examples 1-4 on pages 515-518.
4. Read "In Summary" on page 519.
5. Complete #1, 2, 3, 4, 5, 7, 8, 9, and 12 on pages 519-520.

Expectation #2: Describe the properties of sinusoidal functions.

1. Watch and take notes on instructional video on Exploring Graphs of Sinusoidal Functions.

2. In the Foundations of Mathematics 12 text, in Section 8.2 work through "Explore the Math" on pages 521-522.
3. Read "In Summary" on page 523.
4. Complete #2, 5, 6 on page 524.

Expectation #3: Graph sinusoidal functions.

Expectation #4: Determine the characteristics of a sinusoidal function from its equation.

1. Watch and take notes on instructional video on the Graphs and Equations of Sinusoidal Functions.

2. In the Foundations of Mathematics 12 text, in Section 8.3 work through examples 1-4 on pages 529-535.
3. Read "In Summary" on page 535.
4. Complete #1, 2, 3, 4, 5, 6, 8, 9, 10, 12, 13, and 17 on pages 536-542.

5. In the Foundations of Mathematics 12 text, in Section 8.4 work through examples 1-4 on pages 548-556.
6. Read "In Summary" on page 557.
7. Complete #1, 3, 4, 5, 6, 7, 8, 9, 12, 13, 14, 15, 17, 19, and 22 on pages 558-561.

Expectation #5: Model data with a sinusoidal function.

1. Watch and take notes on instructional video on Modelling Data With Sinusoidal Functions.

2. In the Foundations of Mathematics 12 text, in Section 8.5 work through Examples 1-3 on pages 565-570.
3. Read "In Summary" on page 571.
4. Complete #1, 2, 3, 4, 5, 6, 7, 8 on pages 571-575.

REVIEW

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

- Chapter Self-Test on page 579.
- Practicing on pages 581-582.
- LG 17-18 practice quizzes located here.

Once you are ready, email your teacher for the LG 17-18 quiz.