Math 12 Pre-Calculus LG 8

TRIG FUNCTIONS

INTRODUCTION:

This learning guide will investigate sinusoidal functions and their application in the real world. Check out pages 220-221.

LEARNING GUIDE EXPECTATIONS:

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

1) Sketch the graphs of $y = \sin\theta$ and $y = \cos\theta$ and describe their properties.
2) Apply transformations to the graphs of $y = \sin\theta$ and $= \cos\theta$.
3) Determine a trig equation given a graph of the function.
4) Sketch the graph of $y = \tan\theta$ and describe its properties.
5) Model and solve problems involving trig functions.

EVALUATION:

Write the LG assessment quiz in the test centre. **NOTE: GRAPHING CALCULATORS ARE NOT PERMITTED ON PARTS OF THIS TEST. YOU WILL BE EXPECTED TO DO EXPECTATIONS #1-4 WITHOUT THE CALCULATOR.**

RESOURCES NEEDED:

Math 12 Pre-Calc Text

THSS Math 12 Pre-Calc Learning Guides.

www.thssmath.com

LEARNING ACTIVITIES:

Expectation #1: Sketch the graphs of $y = \sin\theta$ and $y = \cos\theta$ and describe their properties.

1. Watch and take notes on instructional video on Graphing $y = \sin\theta$ and $y = \cos\theta$.

2. In the textbook, read page 222 and complete Investigate the Sine and Cosine Functions of page 222-223.
3. Read Link the Ideas on page 223 – 224.
4. Work through Example 1 on pages 224-22 and complete the "Your Turn" questions on page 225.

5. In your math journal, draw a graph of $y = \sin\theta$ and $y = \cos\theta$ and describe the following properties: domain, range, θ-intercepts, y-intercept, maximum, minimum, period and amplitude.

6. Work through Example 2 on pages 226-227 and complete the corresponding Your Turn questions.
7. Read the bottom half of page 227.
8. Work through Examples 3 and 4 on pages 228-232 and complete the corresponding Your Turn questions.
9. Read Key Ideas on page 232.

10. In your math journal, describe using an example, how to find the amplitude and the period of a sinusoidal function.

11. In the textbook, complete pages 233-237 #1-11, 14, 20, 22, C2.

Expectation #2: Apply transformations to the graphs of $y = \sin\theta$ and $= \cos\theta$.

Expectation #3: Determine a trig equation given a graph of the function.

1. Watch and take notes on instructional video on Translating Trig Functions.

2. Read Link the Ideas on page 239.
3. Work through Examples 1-5 on pages pages 240-248.

4. Read Key Ideas on page 249. In your journal, describe how the amplitude, period, phase shift, vertical displacement, maximum and minimum values can be determined from the equation $y = a\sin b(x - c) + d$ or $y = a\cos b(x - c) + d$.

5. In the textbook, complete pages 250-255 #1-7, 10, 13-16, 22, 24.

Expectation #4: Sketch the graph of $y = \tan\theta$ and describe its properties.

1. Watch and take notes on instructional video on Graphing $y = \tan\theta$.

2. Read Link the Ideas on page 258.
3. Work through Examples 1-2 on pages 259-261 and complete the corresponding Your Turn questions.

4. Read Key Ideas on page 262. In your journal, draw a graph of $y = \tan\theta$ and describe the following properties: domain, range, θ-intercepts, y-intercept, maximum, minimum, period and location of asymptotes.

5. In the textbook, complete pages 262-265 #1, 3, 8.

Expectation #5: Model and solve problems involving trig functions.

1. Watch and take notes on instructional video on Applications of Trig Functions.

2. Read Link the Ideas on page 267.
3. Work through Examples 1-4 on pages 268-274 and complete the corresponding Your Turn questions.

4. Read Key Ideas on page 274.

5. In the textbook, complete pages 275-281 #1-6, 9, 10, 13, 16, 19, C1.

REVIEW AND CHALLENGE

1. In the textbook, complete Chapter 5 Review pages 282-285 #1 – 24.
2. Complete Chapter 5 Practice Test pages 286-287 #1 – 17.

Key Terms: periodic function, period, sinusoidal curve, amplitude, vertical displacement, phase shift.

PRACTICE QUIZZES

Practice quiz #1
Practice quiz #2
Practice quiz #3
Practice quiz #4

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