Math 12 Pre-Calculus LG 1

TRANSFORMATIONS – PART A

INTRODUCTION:

This learning guide will explore the relationship between a function and its transformed graph. Check out pages 4-5.

LEARNING GUIDE EXPECTATIONS:

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

1) understand the effects of horizontal and vertical translations on the graphs of functions and their related equations.
2) understand the effects of horizontal and vertical stretches on the graphs of functions and their related equations.
3) understand the effects of reflections on the graphs of functions and their related equations.

EVALUATION:

Complete the LG 1 assessment quiz.

RESOURCES NEEDED:

Math 12 Pre-Calc Text

Math 12 Pre-Calc Learning Guides.

sd42onlinemath.yolasite.com

LEARNING ACTIVITIES:

Expectation #1: Understand the effects of horizontal and vertical translations on the graphs of functions and their related equations.

1. Watch and take notes on instructional video on Horizontal & Vertical Translations.
2. In the textbook, complete the Investigate Vertical and Horizontal Translations activity #1-9 on pages 6 and 7.
3. In the textbook, read pages 7 and 8.

4. Work through Examples 1 – 3 on pages 8 – 11 and complete the corresponding "Your Turn" questions.

5. Read Key Ideas on page 12. In your math journal, explain what changes need to be made to a function $y = f(x)$ to move the graph up or down and what changes need to be made to move the graph left or right. Use a graph of a function ($= x^2$ would be a good choice) to illustrate.

6. In the textbook, complete pages 12-15 #3, 4, 5, 9, 10, 11, 17, 19, C3.

Expectation #2: Understand the effects of horizontal and vertical stretches on the graphs of functions and their related equations.

Expectation #3: Understand the effects of reflections on the graphs of functions and their related equations.

1. Watch and take notes on instructional video on Stretches of Functions.

2. Watch and take notes on instructional video on Reflections of Functions.

3. In the textbook, complete the Investigate Reflections and Stretches of Functions activity #1-11 on pages 16-18.

4. Read Link the Ideas on page 18 and Key Ideas (the first two rows) on page 27. Work through Example 1 on pages 18-20 and then complete Your Turn on page 20.

5. In your journal, describe what changes need to be made to the equation to produce a reflection in the x and y axis. Use an example to illustrate.

6. In the textbook, read Vertical and Horizontal Stretches on page 20. Work through Examples #2-4 on pages 21-27 and complete the corresponding Your Turn questions.

7. Read Key Ideas (last 2 rows) on page 27. In your math journal, describe what changes need to be made to the equation to produce a vertical expansion or compression and a horizontal expansion or compression.

8. In the textbook, complete pages 28 – 31 #1, 2, 3, 4, 5, 7, 9, 10, 14, 15.

REVIEW AND CHALLENGE

1. In the textbook, complete Chapter 1 Review pages 56 - 57 #1-8.
2. Complete Chapter 1 Practice Test pages 58-59 #1 – 8, 13, 14.

PRACTICE QUIZZES

Practice Test #1
Practice Test #2
Practice Test #3
Practice Test #4

Key Terms: Transformation, mapping, translation, reflection, invariant point, stretch (expansion & compression).