Math 11 Pre-Calculus LG 2

GEOMETRIC SEQUENCES AND SERIES

INTRODUCTION:

You've now looked at numbers that grow arithmetically. In this learning guide, we will look at groups of numbers that grow exponentially (the numbers are multiplied by a common ratio).

LEARNING GUIDE EXPECTATIONS:

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

1) identify and build a geometric sequence.
2) find unknown quantities using the geometric sequence formula.
3) find the sum of a geometric and infinite geometric series.
4) manipulate the geometric and infinite geometric series formulae in order to find an unknown quantity.

EVALUATION:

You are ready to progress to the next learning guide when you can demonstrate your understanding of the above expectations. Please refer to your Mathematics 11 Pre-Calc Marks Record Sheet to determine the assessment.

RESOURCES NEEDED:

Math 11 Pre-Calc Text

THSS Math 11 Pre-Calc Learning Guides.

LEARNING ACTIVITIES:

Expectation #1: Identify and build a geometric sequence.
Expectation #2: Find unknown quantities using the geometric sequence formula.

1. Watch and take notes on instructional video on Geometric Sequences.
2. In the textbook, read page 32 and the Link the Ideas on page 34.
3. Work through Example 1 on pages 34 and 35. Now complete Your Turn on page 35.
4. Work through Example 2 on pages 35. Now complete Your Turn on page 35.
5. Work through Example 3 on pages 36-37. Now complete Your Turn on page 37
6. Work through Example 4 on pages 37-38.

7. Read Key Ideas on page 39. In your math journal, define a geometric sequence. Determine how you would find the common ratio. Write the formula for the general term of a geometric sequence and define t_1, n, r, and t_n.

8. Complete on page 39-45 #1-8, 10-13, 16, 18, 19, 22, 23, 25, 26.

Expectation #3: Find the sum of a geometric and infinite geometric series.
Expectation #4: Manipulate the geometric and infinite geometric series formulae in order to find an unknown quantity.

1. Watch and take notes on instructional video on Geometric Series.

2. Read page 46 and complete the Investigate Fractals activity on pages 46-47.
3. Read Link the Ideas on pages 48-49.
4. Work through Example 1 on pages 49-50. Now complete Your Turn on page 50.
5. Work through Example 2 on pages 50-51. Now complete Your Turn on page 51.
6. Work through Example 3 on page 52.

7. Read Key Ideas on page 53. In your math journal, define what a geometric series is. Write the formulas for finding the sum of geometric series.

8. Complete pages 53-56 #1-10, 13, 16, 17, 19, 20.

9. Watch and take notes on instructional video on Infinite Geometric Series.

10. Read page 58 and complete the Investigate an Infinite Series activity on pages 58-59.
11. Read Link the Ideas on pages 60-61.
12. Work through Example 1 on page 61. Now complete Your Turn on page 61.
13. Work through Example 2 on pages 62.

14. Read Key Ideas on page 63. In your math journal, define what an infinite geometric series is and explain how you know if the sum converges or diverges. Write the formulas for finding the sum of an infinite geometric series.

15. Complete pages 63-64 #1, 2, 4-11, 13, 15-18.

REVIEW AND CHALLENGE

1. Complete Chapter Review page 67-68 #12-23.

Key Terms: geometric sequence, common ratio (r), geometric series, infinite geometric series, convergent series, divergent series.

PRACTICE QUIZZES

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