Lesson 1.4: Geometric Series

▤ Explore Your Understanding Assignment

This assignment includes multiple choice and short answer questions. For multiple choice questions, select the best answer. Each is worth 1 mark. Marks assigned to short answer questions are indicated for each question. Be sure to show all necessary work.

①_____ 1.   Determine the sum of the geometric series $\frac{2}{3} + \frac{4}{3} + \frac{8}{3} + \ldots + \frac{128}{3}$.

  A. $\frac{128}{3}$

  B. $\frac{254}{3}$

  C.   128

  D.   254

①_____ 2.   Determine the sum of the geometric series $7 + 35 + 175 + \ldots + t_8$.

  A.   136 717

  B.   683 592

  C.   4 804 000

  D.   6 725 600

①_____ 3.   The geometric series $0.1 + 0.2 + 0.4 + \ldots$ is

  A.   convergent, and the infinite sum cannot be determined

  B.   divergent, and the infinite sum cannot be determined

  C.   convergent, and the sum is 1

  D.   divergent, and the finite sum is 1

① _____ 4. The sum of an infinite geometric series is 5. The first term of the series is 4. What is the common ratio?

      A.   0.2

      B.   0.25

      C.   0.75

      D.   0.8

① _____ 5. The common ratio of a geometric series is 3 and the fifth term is 324. What is the value of the first term?

      A.   4

      B.   13

      C.   108

      D.   312

6. A special event organizer wants to get the word out to 100 000 teens in the area about a concert coming up in three months. By posting the event on the musician's website, 100 teens in the area will find out about the event in the first week. Research suggests that each of those teens will tell four new teens about the event, and those friends each will tell four more teens about it.

②   a. How many times does this pattern need to continue until 100 000 teens know about the event?

(1)   b. What assumption is made in order to answer part a.?

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7.   A patient takes a pill that holds 50 mg of medicine in it. The pill is metabolized, or used up, at a rate of 55% every hour.

(1)   a. Calculate how much of the pill is left after one hour.

(1)   b. Rounded to the nearest hundredth, how much of the pill has been used by the body after four hours?

①   c.   If the patient does not take another pill, how much of the pill will the patient use after an infinite amount of time? (Round answer to the nearest hundredth.)

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You have completed *Lesson 1.4 Explore Your Understanding Assignment.* Please proceed to the *Unit 1: Sequences and Series Final Review Assignment* on the next page of this *Workbook.*