

Lesson 3: Infinite Geometric Series

Question #1

Reference Q.17821

What are the major differences between a sequence and a series?

Question #2

Reference Q.17822

What is the difference between a finite and an infinite sequence/series?

Question #3

Reference Q.17823

What is the difference between a convergent and divergent series?

Question #4

Reference Q.17824

Label each part of the formula, $S_{\infty} = \frac{a}{1-r}$.

Question #5

Reference Q.17825

Answer the following questions based on $S_{\infty} = \frac{3}{1-0.5}$

- What is the first term in this series?
- What is the common ratio in this series?
- What is the sum of this infinite series?

Question #6

Reference Q.17826

Answer the following questions based on $S_{\infty} = \frac{-22}{1-\frac{2}{7}}$

- What is the first term in this series?
- What is the common ratio in this series?
- What is the sum of this infinite series?

Question #7

Reference Q.17829

Answer the following questions based on $S_{\infty} = \frac{100}{1+\frac{1}{4}}$.

- What is the first term in this series?
- What is the common ratio in this series?
- What is the sum of this infinite series?

Question #8

Reference Q.17827

Given $S_{\infty} = \frac{100}{1+\frac{1}{4}}$, show that this series is converging to the sum of

80 by finding the sum of the first seven terms.

Question #9

Reference Q.17828

- Is the following series convergent or divergent? Explain your answer.
 $25 + 12.5 + 6.25 + 3.125 + \dots$
- Find S_{∞}

Question #10

Reference Q.17830

- Is the following series convergent or divergent? Explain your answer.
 $(-4) + (-12) + (-36) + (-108) + (-324) + \dots$
- Find S_{∞}

Question #11

Reference Q.17831

Answer the questions given the sequence $\{12, 4, \frac{4}{3}, \frac{4}{9}, \frac{4}{27}, \dots\}$.

- Find the exact value of S_8
- Find the exact value of S_{∞} . If you can't, explain why.

Question #12

Reference Q.17832

Answer the questions given the sequence $\{16, -2, \frac{1}{4}, -\frac{1}{32}, \dots\}$.

- Find the exact value of S_4
- Find the exact value of S_∞ . If you can't, explain why.

Question #13

Reference Q.17833

Answer the questions given the sequence $\{-10, 20, -40, 80, -160, \dots\}$.

- Find the exact value of S_{10}
- Find the exact value of S_∞ . If you can't, explain why.

Question #14

Reference Q.17834

Answer the questions given the sequence $\{1, 3, 9, 27, \dots\}$.

- Find the exact value of S_{12}
- Find the exact value of S_∞ . If you can't, explain why.

Question #15

Reference Q.17835

Answer the questions given the sequence $\{\frac{1}{2}, \frac{3}{8}, \frac{9}{32}, \frac{27}{128}, \dots\}$.

- Find the exact value of S_7
- Find the exact value of S_∞ . If you can't, explain why.

Question #16

Reference Q.17836

- What are the first four terms in the sequence given that

$$S_\infty = \frac{5}{1 - \frac{1}{4}}$$

- What is S_∞ ?

Question #17

Reference Q.17837

- What are the first four terms of the sequence given that the

sum of the sequence is found by $S_\infty = \frac{-20}{1 - \frac{2}{5}}$.

- What is S_∞ ?

Question #18

Reference Q.17838

Write **0.5555....** as a fraction.

Question #19

Reference Q.17839

Write **0.383838....** as a fraction.

Question #20

Reference Q.17840

Write **0.127127...** as a fraction.