

**Problems for Gateway #1: Evaluating the Sum of an
Infinite Geometric Series**

1. The sum of the series: $2 + 1 + \frac{1}{2} + \frac{1}{4} + \frac{1}{8} + \dots$ is equal to
 - (a) 3.5
 - (b) 12
 - (c) 4
 - (d) It is not possible to find the sum as the series does not converge.

2. The sum of the series: $0.9 + (0.9)^2 + (0.9)^3 + \dots$ is equal to
 - (a) 9
 - (b) 10
 - (c) 0.9
 - (d) 0.1

3. The sum of the series: $0.1 + (0.1)^2 + (0.1)^3 + \dots$ is equal to
 - (a) 9
 - (b) 0.9
 - (c) 0.1
 - (d) $\frac{1}{9}$

4. The sum of the series: $-1 - \frac{1}{2} - \frac{1}{4} - \frac{1}{8} - \dots$ is equal to
 - (a) It is not possible to find the sum as the series does not converge.
 - (b) -2
 - (c) 2
 - (d) -100

5. The sum of the series: $1 + \frac{-1}{3} + \left(\frac{-1}{3}\right)^2 + \left(\frac{-1}{3}\right)^3 + \dots$ is equal to
- (a) 1.5
 - (b) -3
 - (c) $\frac{3}{4}$
 - (d) It is not possible to find the sum as the series does not converge.
6. The sum of the series: $1 + 0.1 + 0.01 + 0.001 + \dots$ is equal to
- (a) $\frac{1}{0.9}$
 - (b) 0.9
 - (c) 9
 - (d) It is not possible to find the sum as the series does not converge.
7. The sum of the series: $9 + 0.09 + 0.0009 + \dots$ is equal to
- (a) 9
 - (b) $\frac{9}{0.99}$
 - (c) 0.9
 - (d) $\frac{1}{1.1}$
8. The sum of the series: $1 + 0.1 + (0.1)^2 + (0.1)^3 + \dots$ is equal to
- (a) $\frac{1}{9}$
 - (b) 0.9
 - (c) $\frac{10}{9}$
 - (d) 0.1

9. The sum of the series: $-1 - 2 - 4 - 8 - \dots$ is equal to
- (a) -100
 - (b) -2
 - (c) 2
 - (d) It is not possible to find the sum as the series does not converge.
10. The sum of the series: $1 + \frac{1}{-3} + \left(\frac{1}{-3}\right)^2 + \left(\frac{1}{-3}\right)^3 + \dots$ is equal to
- (a) 1.5
 - (b) -3
 - (c) $\frac{3}{-4}$
 - (d) $\frac{3}{4}$

Answers

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|----|---|----|---|----|---|-----|---|----|---|----|---|
| 1. | C | 2. | A | 3. | D | 4. | B | 5. | C | 6. | A |
| 7. | B | 8. | C | 9. | D | 10. | A | | | | |