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

1.   The sum of the series: $2 + 1 + \dfrac{1}{2} + \dfrac{1}{4} + \dfrac{1}{8} + \dots$ 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) $\dfrac{1}{9}$

4.   The sum of the series: $-1 - \dfrac{1}{2} - \dfrac{1}{4} - \dfrac{1}{8} - \dots$ 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: $1 + \dfrac{-1}{3} + \left(\dfrac{-1}{3}\right)^2 + \left(\dfrac{-1}{3}\right)^3 + ...$ is equal to

    (a)   1.5

    (b)   −3

    (c) $\dfrac{3}{4}$

    (d)   It is not possible to find the sum as the series does not converge.

6. The sum of the series: $1 + 0.1 + 0.01 + 0.001 + ...$ is equal to

    (a) $\dfrac{1}{0.9}$

    (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: $9 + 0.09 + 0.0009 + ...$ is equal to

    (a)   9

    (b) $\dfrac{9}{0.99}$

    (c)   0.9

    (d) $\dfrac{1}{1.1}$

8. The sum of the series: $1 + 0.1 + (0.1)^2 + (0.1)^3 + ...$ is equal to

    (a) $\dfrac{1}{9}$

    (b)   0.9

    (c) $\dfrac{10}{9}$

    (d)   0.1

9. The sum of the series: $-1 - 2 - 4 - 8 - ...$ 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: $1 + \dfrac{1}{-3} + \left(\dfrac{1}{-3}\right)^2 + \left(\dfrac{1}{-3}\right)^3 + ...$ is equal to

    (a) 1.5

    (b) -3

    (c) $\dfrac{3}{-4}$

    (d) $\dfrac{3}{4}$

Answers

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