12-2

Practice

Geometric Sequences and Series

Determine the common ratio and find the next three terms of each geometric sequence.

1. $-1, 2, -4, \ldots$ **2.** $-4, -3, -\frac{9}{4}, \ldots$ **3.** $12, -18, 27, \ldots$

For exercises 4–9, assume that each sequence or series is geometric.

4. Find the fifth term of the sequence $20, 0.2, 0.002, \ldots$.

5. Find the ninth term of the sequence $\sqrt{3}, -3, 3\sqrt{3}, \ldots$.

6. If $r = 2$ and $a_4 = 28$, find the first term of the sequence.

7. Find the first three terms of the sequence for which $a_4 = 8.4$ and $r = 4$.

8. Find the first three terms of the sequence for which $a_6 = \frac{1}{32}$ and $r = \frac{1}{2}$.

9. Write a sequence that has two geometric means between 2 and 0.25.

10. Write a sequence that has three geometric means between -32 and -2.

11. Find the sum of the first eight terms of the series $\frac{3}{4} + \frac{9}{20} + \frac{27}{100} + \cdots$.

12. Find the sum of the first 10 terms of the series $-3 + 12 - 48 + \cdots$.

13. ***Population Growth*** A city of 100,000 people is growing at a rate of 5.2% per year. Assuming this growth rate remains constant, estimate the population of the city 5 years from now.