

Section 10.3 Worksheet (Geometric Sequences)

Write the first five terms of each geometric sequence.

1) $a_1 = 24, r = \frac{1}{3}$

2) $a_n = -3a_{n-1}, a_1 = -2$

Use the formula for the general term of a geometric sequence to find the indicated term of each sequence with the given first term, a_1 , and common ratio, r .

3) Find a_{12} , when $a_1 = 4, r = -2$.

4) Find a_{30} , when $a_1 = -8000, r = \frac{1}{2}$.

Write a formula for the general term (the n th term) of each geometric sequence. Then use the formula for a_n to find a_9 , the 9th term of the sequence.

5) $5, -1, \frac{1}{5}, -\frac{1}{25}, \dots$

6) $0.07, 0.007, 0.0007, 0.00007, \dots$

Find the sum of the finite geometric series.

7) Find the sum of the first 12 terms of the geometric sequence:

$$-3, 6, -12, 24, \dots$$

Find the sum of the first 11 terms of the geometric sequence:

8) $-\frac{1}{24}, \frac{1}{12}, -\frac{1}{6}, \frac{1}{3}, \dots$

Find the sum of the finite geometric series.

9) $\sum_{i=1}^6 4^i$

10) $\sum_{i=1}^6 \left(\frac{1}{3}\right)^{i+1}$

Find the sum of the infinite geometric series.

11) $1 + \frac{1}{4} + \frac{1}{16} + \frac{1}{64} + \dots$

12) $3 - 1 + \frac{1}{3} - \frac{1}{9} + \dots$

Are the following sequences arithmetic, geometric, or neither? State the sum or difference.

13) $-\frac{1}{3}, -\frac{1}{5}, -\frac{1}{7}, -\frac{1}{9}, \dots$

14) $-\frac{2}{3}, -\frac{5}{3}, -\frac{8}{3}, -\frac{11}{3}, \dots$

Write a formula for the general term (the n th term) of each arithmetic sequence.

15) $a_7 = -12, a_{12} = 38$

16) $a_{20} = 38, a_{23} = -10$

Find the sum.

17) $\sum_{k=1}^{10} (-3 + 2k)$

18) $\sum_{i=1}^{10} \frac{1}{3}(-2)^i$

19) $\sum_{i=1}^4 \frac{(i-4)}{i!}$

20) $\sum_{j=1}^{\infty} \frac{1}{2}(-3)^j$