

Geometric Sequences (10.3)

Geometric Sequences –

ratio –

Identifying a Sequence: State whether the following sequences are geometric, arithmetic or neither? Name the common difference or ratio.

1) 12, 36, 108, 324, ...

4) -8, 4, -2, 1, ...

2) 4, -1, -6, ...

5) 2, 5, 11, 23, 47, ...

3) .01, .001, .0001, ...

General Term of a Geometric Sequence

$a_n =$

Common Ratio of non-consecutive terms

$r =$

6) Write the first 5 terms of the geometric sequence with first term 3 and a common ratio of 2. Then find a **formula** for the general term of the geometric sequence.

7) Find a_8 when $a_1 = 4$, $r = -2$

8) Find the equation of the geometric sequence if $a_3 = 5$ and $r = 2$.

9) The 4th term of a geometric sequence is 125, and the 10th term is $125/64$. Find the 14th term.

Sum of a Finite Geometric Sequence

$$S_n =$$

Sum of a Finite Geometric Sequence: Find the sum of each geometric sequence.

10) Find the sum for $4 + 12 + 36 + 108 + \dots$
if $n = 10$.

11) Find the sum of the first 14 terms of the
geometric sequence: $-\frac{1}{24}, \frac{1}{12}, -\frac{1}{6}, \frac{1}{3}, \dots$

12)
$$\sum_{i=1}^6 2\left(\frac{1}{3}\right)^i$$

13)
$$\sum_{i=1}^7 \frac{1}{3}\left(-\frac{1}{2}\right)^{i+1}$$

Sum of an Infinite Geometric Sequence

$$S_\infty =$$

Sum of an Infinite Geometric Sequence: Find the sum of each infinite geometric sequence.

14) $10 + 6 + \frac{18}{5} + \frac{54}{25} + \dots$

15)
$$\sum_{i=1}^{\infty} 4(0.6)^{i-1}$$