

## Geometric Sequences


 Determine if the sequence is geometric. If it is, find the common ratio.

1)  $1, -7, 49, -343, \dots$

3)  $8, 24, 48, 240, \dots$

2)  $-3, -12, -48, -192, \dots$

4)  $-5, -10, -20, -40, \dots$

 Given the first term and the common ratio of a geometric sequence find the first five terms and the explicit formula.

5)  $a_1 = 0.4, r = -3$

6)  $a_1 = 0.2, r = 4$


 Given the recursive formula for a geometric sequence find the common ratio, the first five terms, and the explicit formula.

7)  $a_n = a_{n-1} \times 4, a_1 = 2$

9)  $a_n = a_{n-1} \cdot 5, a_1 = 0.2$

8)  $a_n = a_{n-1} \cdot (-2), a_1 = -4$

10)  $a_n = a_{n-1} \cdot 3, a_1 = -3$

 Given two terms in a geometric sequence find the 6th term and the recursive formula.

11)  $a_3 = 576$  and  $a_5 = 36$

12)  $a_2 = -0.4$  and  $a_4 = -1.6$

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## Answers of Worksheets

### Geometric Sequences

- 1)  $r = -7$
- 2)  $r = 4$
- 3) not geometric
- 4)  $r = 2$
- 5) First Five Terms:  $0.4, -1.2, 3.6, -10.8, 32.4$   
Explicit:  $a_n = 0.4 \times (-3)^{n-1}$
- 6) First Five Terms:  $0.2, 0.8, 3.2, 12.8, 51.2$   
Explicit:  $a_n = 0.2 \times (4)^{n-1}$
- 7) Common Ratio:  $r = 4$   
First Five Terms:  $2, 8, 32, 128, 512$   
Explicit:  $a_n = 2 \cdot (4)^{n-1}$
- 8) Common Ratio:  $r = -2$   
First Five Terms:  $-4, 8, -16, 32, -64$   
Explicit:  $a_n = -4 \cdot (-2)^{n-1}$
- 9) Common Ratio:  $r = 5$   
First Five Terms:  $0.2, 1, 5, 25, 125, 625$   
Explicit:  $a_n = 0.2 \cdot (5)^{n-1}$
- 10) Common Ratio:  $r = 3$   
First Five Terms:  $-3, -9, -27, -81, -243$   
Explicit:  $a_n = -3 \cdot (3)^{n-1}$
- 11)  $a_6 = -9$ , Recursive:  $a_n = a_{n-1} \cdot \left(\frac{-1}{4}\right)$ ,  $a_1 = 9, 216$
- 12)  $a_6 = -6.4$ , Recursive:  $a_n = a_{n-1} \cdot (-2)$ ,  $a_1 = 0.2$