Kuta Software - Infinite Algebra 2

Name\_\_\_\_\_

6) 1, -5, 25, -125, ...

Date Period

## **Geometric Sequences**

5) -2, -4, -8, -16, ...

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

- 1) -1, 6, -36, 216, ...
   2) -1, 1, 4, 8, ...

   3) 4, 16, 36, 64, ...
   4) -3, -15, -75, -375, ...

Given the explicit formula for a geometric sequence find the first five terms and the 8th term.

7) 
$$a_n = 3^{n-1}$$
  
8)  $a_n = 2 \cdot \left(\frac{1}{4}\right)^{n-1}$ 

9) 
$$a_n = -2.5 \cdot 4^{n-1}$$
 10)  $a_n = -4 \cdot 3^{n-1}$ 

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

11) 
$$a_n = a_{n-1} \cdot 2$$
  
 $a_1 = 2$ 
12)  $a_n = a_{n-1} \cdot -3$   
 $a_1 = -3$ 

13) 
$$a_n = a_{n-1} \cdot 5$$
  
 $a_1 = 2$ 
14)  $a_n = a_{n-1} \cdot 3$   
 $a_1 = -3$ 

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

15) 
$$a_1 = 0.8, r = -5$$
 16)  $a_1 = 1, r = 2$ 

Given the first term and the common ratio of a geometric sequence find the recursive formula and the three terms in the sequence after the last one given.

17) 
$$a_1 = -4, r = 6$$
 18)  $a_1 = 4, r = 6$ 

19) 
$$a_1 = 2, r = 6$$
 20)  $a_1 = -4, r = 4$ 

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

21)  $a_1 = 25, r = -5$  22)  $a_1 = 4, r = 5$ 

Given two terms in a geometric sequence find the 8th term and the recursive formula.

23) 
$$a_4 = -12$$
 and  $a_5 = -6$   
24)  $a_5 = 768$  and  $a_2 = 12$ 

25) 
$$a_1 = -2$$
 and  $a_5 = -512$   
26)  $a_5 = 3888$  and  $a_3 = 108$ 

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**Geometric Sequences** 

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

1) -1, 6, -36, 216, ... 2) -1, 1, 4, 8, ... r = -6Not geometric 3) 4, 16, 36, 64, ... 4) -3, -15, -75, -375, ... Not geometric r = 55) -2, -4, -8, -16, ... 6) 1, -5, 25, -125, ...

$$r = 2$$
  $r = -5$ 

Given the explicit formula for a geometric sequence find the first five terms and the 8th term.

7) 
$$a_n = 3^{n-1}$$
 8)  $a_n = 2 \cdot \left(\frac{1}{4}\right)^{n-1}$ 

 First Five Terms: 1, 3, 9, 27, 81
 First Five Terms: 2,  $\frac{1}{2}$ ,  $\frac{1}{8}$ ,  $\frac{1}{32}$ ,  $\frac{1}{128}$ 
 $a_8 = 2187$ 
 First Five Terms: 2,  $\frac{1}{2}$ ,  $\frac{1}{8}$ ,  $\frac{1}{32}$ ,  $\frac{1}{128}$ 
 $a_8 = \frac{1}{8192}$ 
 10)  $a_n = -4 \cdot 3^{n-1}$ 

 First Five Terms: -2.5, -10, -40, -160, -640
 First Five Terms: -4, -12, -36, -108, -324

  $a_8 = -40960$ 
 $a_8 = -8748$ 

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

- 11)  $a_n = a_{n-1} \cdot 2$ 12)  $a_n = a_{n-1} \cdot -3$  $a_1 = -3$  $a_1 = 2$ Common Ratio: r = -3Common Ratio: r = 2First Five Terms: 2, 4, 8, 16, 32 Explicit:  $a_n = -3 \cdot (-3)^{n-1}$ Explicit:  $a_n = 2 \cdot 2^{n-1}$
- 13)  $a_n = a_{n-1} \cdot 5$  $a_1 = 2$ Common Ratio: r = 5First Five Terms: 2, 10, 50, 250, 1250 Explicit:  $a_n = 2 \cdot 5^{n-1}$
- First Five Terms: -3, 9, -27, 81, -243 14)  $a_n = a_{n-1} \cdot 3$  $a_1 = -3$ 
  - Common Ratio: r = 3First Five Terms: -3, -9, -27, -81, -243 Explicit:  $a_n = -3 \cdot 3^{n-1}$

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

15)  $a_1 = 0.8, r = -5$ 16)  $a_1 = 1, r = 2$ First Five Terms: 0.8, -4, 20, -100, 500First Five Terms: 1, 2, 4, 8, 16Explicit:  $a_n = 0.8 \cdot (-5)^{n-1}$ Explicit:  $a_n = 2^{n-1}$ 

Given the first term and the common ratio of a geometric sequence find the recursive formula and the three terms in the sequence after the last one given.

17)  $a_1 = -4, r = 6$ 18)  $a_1 = 4, r = 6$ Next 3 terms: 24, 144, 864 Next 3 terms: -24, -144, -864 Recursive:  $a_n = a_{n-1} \cdot 6$ Recursive:  $a_n = a_{n-1} \cdot 6$  $a_1 = 4$  $a_1 = -4$ 19)  $a_1 = 2, r = 6$ 20)  $a_1 = -4, r = 4$ Next 3 terms: 12, 72, 432 Next 3 terms: -16, -64, -256 Recursive:  $a_n = a_{n-1} \cdot 6$ Recursive:  $a_n = a_{n-1} \cdot 4$  $a_1 = 2$  $a_1 = -4$ 

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

21)  $a_4 = 25, r = -5$ 22)  $a_1 = 4, r = 5$ First Five Terms: -0.2, 1, -5, 25, -125First Five Terms: 4, 20, 100, 500, 2500Explicit:  $a_n = -0.2 \cdot (-5)^{n-1}$ Explicit:  $a_n = 4 \cdot 5^{n-1}$ Recursive:  $a_n = a_{n-1} \cdot -5$ Recursive:  $a_n = a_{n-1} \cdot 5$  $a_1 = -0.2$  $a_1 = 4$ 

Given two terms in a geometric sequence find the 8th term and the recursive formula.

23)  $a_4 = -12$  and  $a_5 = -6$ 24)  $a_5 = 768$  and  $a_2 = 12$  $a_8 = -\frac{3}{4}$  $a_8 = 49152$ Recursive:  $a_n = a_{n-1} \cdot 4$ Recursive:  $a_n = a_{n-1} \cdot \frac{1}{2}$  $a_1 = 3$  $a_1 = -96$ 25)  $a_1 = -2$  and  $a_5 = -512$ 26)  $a_5 = 3888$  and  $a_3 = 108$ *a*<sub>°</sub> = 32768 *a*<sub>°</sub> = 839808 Recursive:  $a_n = a_{n-1} \cdot 6$ Recursive:  $a_n = a_{n-1} \cdot -4$  $a_1 = -2$  $a_1 = 3$ 

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