Candle Center - Infinite Algebra 2

Name_____

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

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

Given the explicit formula for a geometric sequence find the first five terms and the 8th term. 1 1

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

Date Period

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)
$$a_4 = 25, r = -5$$
 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, ... Not geometric r = -63) 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: $r = 3$
First Five Terms: $-3, -9, -27, -81, -243$
Explicit: $a_n = -3 \cdot 3^{n-1}$

Name_____

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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.

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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 $a_3 = 108$ $a_{\circ} = 32768$ *a*_° = 839808 Recursive: $a_n = a_{n-1} \cdot 6$ Recursive: $a_n = a_{n-1} \cdot -4$ $a_1 = -2$ $a_1 = 3$