$\qquad$

## Geometric Sequences

Date $\qquad$ Period $\qquad$
Determine if the sequence is geometric. If it is, find the common ratio.

1) $-1,6,-36,216, \ldots$
2) $-1,1,4,8, \ldots$
3) $4,16,36,64, \ldots$
4) $-3,-15,-75,-375, \ldots$
5) $-2,-4,-8,-16, \ldots$
6) $1,-5,25,-125, \ldots$

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) $a_{4}=25, r=-5$
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 $a_{3}=108$

Candle Center - Infinite Algebra 2

## Geometric Sequences

$\qquad$
Date $\qquad$ Period $\qquad$
Determine if the sequence is geometric. If it is, find the common ratio.

1) $-1,6,-36,216, \ldots$

$$
r=-6
$$

3) $4,16,36,64, \ldots$
4) $-3,-15,-75,-375, \ldots$

Not geometric
5) $-2,-4,-8,-16, \ldots$

$$
r=2
$$

6) $1,-5,25,-125, \ldots$

$$
r=-5
$$

Given the explicit formula for a geometric sequence find the first five terms and the 8th term.
7) $a_{n}=3^{n-1}$

First Five Terms: 1, 3, 9, 27, 81
$a_{8}=2187$
9) $a_{n}=-2.5 \cdot 4^{n-1}$

First Five Terms: $-2.5,-10,-40,-160,-640$ $a_{8}=-40960$
8) $a_{n}=2 \cdot\left(\frac{1}{4}\right)^{n-1}$

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: $-4,-12,-36,-108,-324$
$a_{8}=-8748$

Given the recursive formula for a geometric sequence find the common ratio, the first five terms, and the explicit formula.
11) $a_{n}=a_{n-1} \cdot 2$
$a_{1}=2$
12) $a_{n}=a_{n-1} \cdot-3$
$a_{1}=-3$

Common Ratio: $r=2$
First Five Terms: 2, 4, 8, 16, 32
Explicit: $a_{n}=2 \cdot 2^{n-1}$
Common Ratio: $r=-3$
First Five Terms: $-3,9,-27,81,-243$
Explicit: $a_{n}=-3 \cdot(-3)^{n-1}$

$$
\text { 13) } \begin{aligned}
a_{n} & =a_{n-1} \cdot 5 \\
a_{1} & =2
\end{aligned}
$$

Common Ratio: $r=5$
First Five Terms: 2, 10, 50, 250, 1250
Explicit: $a_{n}=2 \cdot 5^{n-1}$
14) $a_{n}=a_{n-1} \cdot 3$
$a_{1}=-3$
Common Ratio: $r=3$
First Five Terms: $-3,-9,-27,-81,-243$
Explicit: $a_{n}=-3 \cdot 3^{n-1}$

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: $0.8,-4,20,-100,500$
First Five Terms: 1, 2, 4, 8, 16
Explicit: $a_{n}=0.8 \cdot(-5)^{n-1}$
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) $a_{1}=-4, r=6$
Next 3 terms: $-24,-144,-864$
Recursive: $a_{n}=a_{n-1} \cdot 6$

$$
a_{1}=-4
$$

18) $a_{1}=4, r=6$

Next 3 terms: 24, 144, 864
Recursive: $a_{n}=a_{n-1} \cdot 6$

$$
a_{1}=4
$$

19) $a_{1}=2, r=6$

Next 3 terms: 12, 72, 432
Recursive: $a_{n}=a_{n-1} \cdot 6$

$$
a_{1}=2
$$

20) $a_{1}=-4, r=4$

Next 3 terms: $-16,-64,-256$
Recursive: $a_{n}=a_{n-1} \cdot 4$

$$
a_{1}=-4
$$

Given a term in a geometric sequence and the common ratio find the first five terms, the explicit formula, and the recursive formula.
21) $a_{4}=25, r=-5$

First Five Terms: $-0.2,1,-5,25,-125$
Explicit: $a_{n}=-0.2 \cdot(-5)^{n-1}$
Recursive: $a_{n}=a_{n-1} \cdot-5$

$$
a_{1}=-0.2
$$

22) $a_{1}=4, r=5$

First Five Terms: 4, 20, 100, 500, 2500
Explicit: $a_{n}=4 \cdot 5^{n-1}$
Recursive: $a_{n}=a_{n-1} \cdot 5$

$$
a_{1}=4
$$

Given two terms in a geometric sequence find the 8th term and the recursive formula.
23) $a_{4}=-12$ and $a_{5}=-6$
$a_{8}=-\frac{3}{4}$
Recursive: $a_{n}=a_{n-1} \cdot \frac{1}{2}$

$$
a_{1}=-96
$$

25) $a_{1}=-2$ and $a_{5}=-512$

$$
a_{8}=32768
$$

$$
\text { Recursive: } a_{n}=a_{n-1} \cdot-4
$$

$$
a_{1}=-2
$$

24) $a_{5}=768$ and $a_{2}=12$

$$
a_{8}=49152
$$

$$
\text { Recursive: } a_{n}=a_{n-1} \cdot 4
$$

$$
a_{1}=3
$$

26) $a_{5}=3888$ and $a_{3}=108$

$$
a_{8}=839808
$$

$$
\text { Recursive: } a_{n}=a_{n-1} \cdot 6
$$

$$
a_{1}=3
$$

