Algebra 2

Name_____

Assignment

Date_____ Period_____

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

1) 1, 4, 16, 64, ...

2) 3, 12, 48, 192, ...

3) 56, 565, 5655, 56555, ...

4) 4, 24, 124, 624, ...

5) 2, 8, 32, 128, ...

6) 2, −6, 18, −54, ...

7) 1, 3, 9, 27, ...

8) 1, −2, 4, −8, ...

Find the common ratio, the explicit formula, and the recursive formula.

9) 1, 4, 16, 64, ...

10) −1, 3, −9, 27, ...

11) 2, 8, 32, 128, ...

12) 3, 9, 27, 81, ...

13) −2, −8, −32, −128, ...

14) −4, −12, −36, −108, ...

15) −2, −12, −72, −432, ...

16) −3, 12, −48, 192, ...

17) 2, −6, 18, −54, ...

18) −2, −4, −8, −16, ...

Find the term named in the problem.

19) −2, 10, −50, 250, ...
    Find a_9

20) −1, 3, −9, 27, ...
    Find a_{12}

21) $-4, -16, -64, -256, ...$
Find a_9

22) $-3, 12, -48, 192, ...$
Find a_{10}

23) $-2, -8, -32, -128, ...$
Find a_9

24) $-4, -8, -16, -32, ...$
Find a_{12}

25) $-2, -4, -8, -16, ...$
Find a_{11}

26) $2, 6, 18, 54, ...$
Find a_{10}

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

27) $a_n = 3 \cdot 3^{n-1}$

28) $a_n = -3^{n-1}$

29) $a_n = -3 \cdot 4^{n-1}$

30) $a_n = -3 \cdot 2^{n-1}$

31) $a_n = -2 \cdot (-3)^{n-1}$

32) $a_n = 4 \cdot 2^{n-1}$

33) $a_n = 2 \cdot (-2)^{n-1}$

34) $a_n = 3 \cdot \left(-\dfrac{1}{6}\right)^{n-1}$

Given the recursive formula for a geometric sequence find the explicit formula.

35) $a_n = a_{n-1} \cdot -4$
$a_1 = 3$

36) $a_n = a_{n-1} \cdot -5$
$a_1 = -2$

37) $a_n = a_{n-1} \cdot 4$
$a_1 = 2$

38) $a_n = a_{n-1} \cdot -4$
$a_1 = -4$

Given the explicit formula for a geometric sequence find the recursive formula.

39) $a_n = 5^{n-1}$

40) $a_n = 4 \cdot 5^{n-1}$

41) $a_n = 4 \cdot 2^{n-1}$

42) $a_n = -2 \cdot 4^{n-1}$

Given the second term and the common ratio of a geometric sequence find the 8th term, the explicit formula, and the recursive formula.

43) $a_2 = 18,\ r = -6$

44) $a_2 = -18,\ r = -6$

45) $a_2 = 3,\ r = 2$

46) $a_2 = -8,\ r = 2$

Answers to Assignment (ID: 1)

1) $r = 4$

2) $r = 4$

3) Not geometric

4) Not geometric

5) $r = 4$

6) $r = -3$

7) $r = 3$

8) $r = -2$

9) Common Ratio: $r = 4$

Explicit: $a_n = 4^{n-1}$

Recursive: $a_n = a_{n-1} \cdot 4$
$a_1 = 1$

10) Common Ratio: $r = -3$

Explicit: $a_n = -(-3)^{n-1}$

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

11) Common Ratio: $r = 4$

Explicit: $a_n = 2 \cdot 4^{n-1}$

Recursive: $a_n = a_{n-1} \cdot 4$
$a_1 = 2$

12) Common Ratio: $r = 3$

Explicit: $a_n = 3 \cdot 3^{n-1}$

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

13) Common Ratio: $r = 4$

Explicit: $a_n = -2 \cdot 4^{n-1}$

Recursive: $a_n = a_{n-1} \cdot 4$
$a_1 = -2$

14) Common Ratio: $r = 3$

Explicit: $a_n = -4 \cdot 3^{n-1}$

Recursive: $a_n = a_{n-1} \cdot 3$
$a_1 = -4$

15) Common Ratio: $r = 6$

Explicit: $a_n = -2 \cdot 6^{n-1}$

Recursive: $a_n = a_{n-1} \cdot 6$
$a_1 = -2$

16) Common Ratio: $r = -4$

Explicit: $a_n = -3 \cdot (-4)^{n-1}$

Recursive: $a_n = a_{n-1} \cdot -4$
$a_1 = -3$

17) Common Ratio: $r = -3$

Explicit: $a_n = 2 \cdot (-3)^{n-1}$

Recursive: $a_n = a_{n-1} \cdot -3$
$a_1 = 2$

18) Common Ratio: $r = 2$

Explicit: $a_n = -2 \cdot 2^{n-1}$

Recursive: $a_n = a_{n-1} \cdot 2$
$a_1 = -2$

19) $a_9 = -781250$

20) $a_{12} = 177147$

21) $a_9 = -262144$

22) $a_{10} = 786432$

23) $a_9 = -131072$

24) $a_{12} = -8192$

25) $a_{11} = -2048$

26) $a_{10} = 39366$

27) First Five Terms: 3, 9, 27, 81, 243
$a_8 = 6561$

28) First Five Terms: -1, -3, -9, -27, -81
$a_8 = -2187$

29) First Five Terms: -3, -12, -48, -192, -768
$a_8 = -49152$

30) First Five Terms: -3, -6, -12, -24, -48
$a_8 = -384$

31) First Five Terms: -2, 6, -18, 54, -162
$a_8 = 4374$

32) First Five Terms: 4, 8, 16, 32, 64
$a_8 = 512$

33) First Five Terms: 2, -4, 8, -16, 32
$a_8 = -256$

34) First Five Terms: 3, $-\dfrac{1}{2}$, $\dfrac{1}{12}$, $-\dfrac{1}{72}$, $\dfrac{1}{432}$

$a_8 = -\dfrac{1}{93312}$

35) $a_n = 3 \cdot (-4)^{n-1}$

36) $a_n = -2 \cdot (-5)^{n-1}$

37) $a_n = 2 \cdot 4^{n-1}$

38) $a_n = -4 \cdot (-4)^{n-1}$

39) $a_n = a_{n-1} \cdot 5$
$a_1 = 1$

40) $a_n = a_{n-1} \cdot 5$
$a_1 = 4$

41) $a_n = a_{n-1} \cdot 2$
$a_1 = 4$

42) $a_n = a_{n-1} \cdot 4$
$a_1 = -2$

43) $a_8 = 839808$

Explicit: $a_n = -3 \cdot (-6)^{n-1}$

Recursive: $a_n = a_{n-1} \cdot -6$
$a_1 = -3$

44) $a_8 = -839808$

Explicit: $a_n = 3 \cdot (-6)^{n-1}$

Recursive: $a_n = a_{n-1} \cdot -6$
$a_1 = 3$

45) $a_8 = 192$

Explicit: $a_n = 1.5 \cdot 2^{n-1}$

Recursive: $a_n = a_{n-1} \cdot 2$
$a_1 = 1.5$

46) $a_8 = -512$

Explicit: $a_n = -4 \cdot 2^{n-1}$

Recursive: $a_n = a_{n-1} \cdot 2$
$a_1 = -4$