Algebra 2 Name_____

Assignment

Date_____ Period____

For each sequence, state if it is arithmetic, geometric, or neither.

1) $2, \frac{2}{5}, \frac{2}{25}, \frac{2}{125}, \frac{2}{625}, \ldots$

2) $-36, -34, -32, -30, -28, \ldots$

3) $17, 14, 11, 8, 5, \ldots$

4) $-9, 21, 51, 81, 111, \ldots$

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

6) $a_n = 3 \cdot 5^{n-1}$

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

8) $a_n = \dfrac{2 + a_{n-1}}{2}$
$a_1 = 26$

9) $a_n = a_{n-1} + n$
$a_1 = 0$

10) $a_n = a_{n-1} + n$
$a_1 = -1$

Determine if the sequence is arithmetic. If it is, find the common difference, the 52nd term, the explicit formula, and the recursive formula.

11) $-14,\ 6,\ 26,\ 46,\ ...$

12) $23,\ 33,\ 43,\ 53,\ ...$

Given two terms in an arithmetic sequence find the common difference, the 52nd term, the explicit formula, and the recursive formula.

13) $a_{19} = 169$ and $a_{39} = 369$

14) $a_{19} = -204$ and $a_{38} = -394$

15) $a_{18} = -509$ and $a_{39} = -1139$

16) $a_{19} = 85$ and $a_{40} = 169$

Given a term in an arithmetic sequence and the common difference find the term named in the problem and the explicit formula.

17) $a_{23} = 8,\ d = 2$
Find a_{38}

18) $a_{32} = 188,\ d = 5$
Find a_{39}

Determine if the sequence is geometric. If it is, find the common ratio, the 8th term, the explicit formula, and the recursive formula.

19) 2, −10, 50, −250, ...

20) 2, 4, 12, 48, ...

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

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

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

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

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

24) $a_2 = 3,\ r = -3$

Find the missing term or terms in each arithmetic sequence.

25) ..., 18, ___, −2, ...

26) ..., 5, ___, −3, ...

27) ..., −13, ___, 387, ...

Find the missing term or terms in each geometric sequence.

28) ..., −2, ___, −8, ...

29) ..., −1, ___, −4, ...

30) ..., 1, ___, 36, ...

Evaluate each arithmetic series described.

31) $\sum_{k=1}^{35} (3k + 3)$

32) $\sum_{m=1}^{12} (3m - 8)$

33) $\sum_{i=1}^{7}(7-10i)$

34) $\sum_{n=1}^{45}(4n-4)$

35) $(-28)+(-37)+(-46)+(-55)...,\ n=19$

36) $(-30)+(-40)+(-50)+(-60)...,\ n=9$

37) $16+26+36+46...,\ n=13$

38) $7+10+13+16...,\ n=7$

Determine the number of terms *n* in each arithmetic series.

39) $a_1 = 36,\ a_n = 432,\ S_n = 10530$

40) $a_1 = 1,\ a_n = 397,\ S_n = 8955$

41) $a_1 = 0,\ a_n = 42,\ S_n = 315$

42) $a_1 = 10,\ a_n = 136,\ S_n = 1095$

43) $a_1 = 5,\ d = 7,\ S_n = 611$

Evaluate each geometric series described.

44) $-1 + 4 - 16 + 64...,\ n = 7$

45) $-2 - 8 - 32 - 128...,\ n = 9$

46) $-1 + 4 - 16 + 64...,\ n = 6$

47) $-1 + 3 - 9 + 27...,\ n = 8$

48) $\sum_{n=1}^{9} 2^{n-1}$

49) $\sum_{k=1}^{9} -2 \cdot (-3)^{k-1}$

50) $\sum_{k=1}^{10} -2 \cdot 3^{k-1}$

51) $\sum_{i=1}^{10} 3^{i-1}$

52) $a_1 = -3,\ r = 2,\ n = 8$

53) $a_1 = -3,\ r = -2,\ n = 7$

54) $a_1 = -3,\ r = 2,\ n = 9$

55) $a_1 = -4,\ r = -6,\ n = 7$

Answers to Assignment (ID: 1)

1) Geometric
2) Arithmetic
3) Arithmetic
4) Arithmetic
5) Geometric
6) Geometric
7) Geometric
8) Neither
9) Neither
10) Neither
11) Common Difference: $d = 20$
$a_{52} = 1006$
Explicit: $a_n = -34 + 20n$
Recursive: $a_n = a_{n-1} + 20$
$a_1 = -14$

12) Common Difference: $d = 10$
$a_{52} = 533$
Explicit: $a_n = 13 + 10n$
Recursive: $a_n = a_{n-1} + 10$
$a_1 = 23$

13) Common Difference: $d = 10$
$a_{52} = 499$
Explicit: $a_n = -21 + 10n$
Recursive: $a_n = a_{n-1} + 10$
$a_1 = -11$

14) Common Difference: $d = -10$
$a_{52} = -534$
Explicit: $a_n = -14 - 10n$
Recursive: $a_n = a_{n-1} - 10$
$a_1 = -24$

15) Common Difference: $d = -30$
$a_{52} = -1529$
Explicit: $a_n = 31 - 30n$
Recursive: $a_n = a_{n-1} - 30$
$a_1 = 1$

16) Common Difference: $d = 4$
$a_{52} = 217$
Explicit: $a_n = 9 + 4n$
Recursive: $a_n = a_{n-1} + 4$
$a_1 = 13$

17) $a_{38} = 38$
Explicit: $a_n = -38 + 2n$

18) $a_{39} = 223$
Explicit: $a_n = 28 + 5n$

19) Common Ratio: $r = -5$
$a_8 = -156250$
Explicit: $a_n = 2 \cdot (-5)^{n-1}$
Recursive: $a_n = a_{n-1} \cdot -5$
$a_1 = 2$

20) Not geometric

21) Common Ratio: $r = 3$
$a_8 = 4374$
Recursive: $a_n = a_{n-1} \cdot 3$
$a_1 = 2$

22) Common Ratio: $r = -3$
$a_8 = -4374$
Recursive: $a_n = a_{n-1} \cdot -3$
$a_1 = 2$

23) $a_8 = -512$
Recursive: $a_n = a_{n-1} \cdot -2$
$a_1 = 4$

24) $a_8 = 2187$
Recursive: $a_n = a_{n-1} \cdot -3$
$a_1 = -1$

25) 8
26) 1

27) 187
28) –4
29) –2
30) 6
31) 1995
32) 138
33) –231
34) 3960
35) –2071
36) –630
37) 988
38) 112
39) 45
40) 45
41) 15
42) 15
43) 13
44) –3277
45) –174762
46) 819
47) 1640
48) 511
49) –9842
50) –59048
51) 29524
52) –765
53) –129
54) –1533
55) –159964