Sequences and Series Review

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

1) $-6,\ -10,\ -14,\ -18, \ldots$

2) $-5,\ 15,\ 35,\ 55, \ldots$

Determine if the sequence is arithmetic. If it is, find the common difference and the term named in the problem.

3) $-36,\ -38,\ -40,\ -42, \ldots$
Find a_{36}

4) $-19,\ -11,\ -3,\ 5, \ldots$
Find a_{23}

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

5) $3,\ 9,\ 27,\ 81, \ldots$

6) $1,\ 4,\ 16,\ 64, \ldots$

Determine if the sequence is geometric. If it is, find the common ratio and the term named in the problem.

7) $-2,\ 4,\ -8,\ 16, \ldots$
Find a_{11}

8) $1,\ 3,\ 6,\ 10, \ldots$
Find a_{11}

Find the missing term or terms in each arithmetic sequence.

9) $\ldots,\ 5,\ \_\_\_,\ -395,\ \ldots$

10) $\ldots,\ 31,\ \_\_\_,\ \_\_\_,\ 16,\ \ldots$

Find the missing term or terms in each geometric sequence.

11) ..., −1, ___, −16, ...

12) ..., 2, ___, 50, ...

Evaluate each arithmetic series described.

13) $\sum_{n=1}^{11} (4n - 4)$

14) $\sum_{k=1}^{9} (14 - 10k)$

Evaluate each series.

15) $\sum_{k=1}^{5} (3k^2 + 2)$

16) $\sum_{a=5}^{10} a(a + 2)$

Rewrite each series using sigma notation.

17) 5 + 25 + 125 + 625 + 3125

18) 5 + 10 + 15 + 20 + 25 + 30

Evaluate each geometric series described.

19) $\sum_{i=1}^{7} 2 \cdot 6^{i-1}$

20) $\sum_{i=1}^{8} 4 \cdot 2^{i-1}$

Evaluate each infinite geometric series described.

21) $\sum_{i=1}^{\infty} -375 \cdot \left(\frac{1}{5}\right)^{i-1}$

22) $\sum_{i=1}^{\infty} -3.6 \cdot (-1.1)^{i-1}$

Given the recursive formula for an arithmetic sequence find the first five terms.

23) $a_n = a_{n-1} + 10$
$a_1 = 35$

24) $a_n = a_{n-1} + 100$
$a_1 = -13$

Sequences and Series Review

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

1) $-6,\ -10,\ -14,\ -18,\ \ldots$

Common Difference: $d = -4$
$a_{52} = -210$
Explicit: $a_n = -2 - 4n$

2) $-5,\ 15,\ 35,\ 55,\ \ldots$

Common Difference: $d = 20$
$a_{52} = 1015$
Explicit: $a_n = -25 + 20n$

Determine if the sequence is arithmetic. If it is, find the common difference and the term named in the problem.

3) $-36,\ -38,\ -40,\ -42,\ \ldots$
Find a_{36}

Common Difference: $d = -2$
$a_{36} = -106$

4) $-19,\ -11,\ -3,\ 5,\ \ldots$
Find a_{23}

Common Difference: $d = 8$
$a_{23} = 157$

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

5) $3,\ 9,\ 27,\ 81,\ \ldots$

Common Ratio: $r = 3$
$a_8 = 6561$
Explicit: $a_n = 3 \cdot 3^{n-1}$

6) $1,\ 4,\ 16,\ 64,\ \ldots$

Common Ratio: $r = 4$
$a_8 = 16384$
Explicit: $a_n = 4^{n-1}$

Determine if the sequence is geometric. If it is, find the common ratio and the term named in the problem.

7) $-2,\ 4,\ -8,\ 16,\ \ldots$
Find a_{11}

Common Ratio: $r = -2$
$a_{11} = -2048$

8) $1,\ 3,\ 6,\ 10,\ \ldots$
Find a_{11}

Not geometric

Find the missing term or terms in each arithmetic sequence.

9) $\ldots,\ 5,\ \_\_\_,\ -395,\ \ldots$

-195

10) $\ldots,\ 31,\ \_\_\_,\ \_\_\_,\ 16,\ \ldots$

$26,\ 21$

Find the missing term or terms in each geometric sequence.

11) ..., −1, ___, −16, ...

−4

12) ..., 2, ___, 50, ...

10

Evaluate each arithmetic series described.

13) $\sum_{n=1}^{11}(4n-4)$

220

14) $\sum_{k=1}^{9}(14-10k)$

−324

Evaluate each series.

15) $\sum_{k=1}^{5}(3k^2+2)$

175

16) $\sum_{a=5}^{10}a(a+2)$

445

Rewrite each series using sigma notation.

17) 5 + 25 + 125 + 625 + 3125 $\sum_{m=1}^{5}5^m$

18) 5 + 10 + 15 + 20 + 25 + 30 $\sum_{m=1}^{6}5m$

Evaluate each geometric series described.

19) $\sum_{i=1}^{7}2\cdot 6^{i-1}$

111974

20) $\sum_{i=1}^{8}4\cdot 2^{i-1}$

1020

Evaluate each infinite geometric series described.

21) $\sum_{i=1}^{\infty}-375\cdot\left(\frac{1}{5}\right)^{i-1}$ $-\frac{1875}{4}$

22) $\sum_{i=1}^{\infty}-3.6\cdot(-1.1)^{i-1}$

No sum

Given the recursive formula for an arithmetic sequence find the first five terms.

23) $a_n = a_{n-1} + 10$
$a_1 = 35$

35, 45, 55, 65, 75

24) $a_n = a_{n-1} + 100$
$a_1 = -13$

−13, 87, 187, 287, 387