

Sequences and Series Practice

Date _____ Period _____

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

1) 1, 2, 4, 8, 16, ...

- A) Arithmetic *B) Geometric
C) Neither

2) $-\frac{13}{7}, -\frac{33}{14}, -\frac{20}{7}, -\frac{47}{14}, -\frac{27}{7}, \dots$

- *A) Arithmetic B) Geometric
C) Neither

3) -31, 169, 369, 569, 769, ...

- *A) Arithmetic B) Geometric
C) Neither

4) -1, 3, -9, 27, -81, ...

- A) Neither B) Arithmetic
*C) Geometric

Find the common difference, the next three terms in the sequence, and the both the EXPLICIT and RECURSIVE rules.

5) 27, 47, 67, 87, ...

Common Difference: $d = 20$
Next 3 terms: 107, 127, 147
Explicit: $a_n = 7 + 20n$
Recursive: $a_n = a_{n-1} + 20$
 $a_1 = 27$

6) -10, 10, 30, 50, ...

Common Difference: $d = 20$
Next 3 terms: 70, 90, 110
Explicit: $a_n = -30 + 20n$
Recursive: $a_n = a_{n-1} + 20$
 $a_1 = -10$

7) 21, 15, 9, 3, ...

Common Difference: $d = -6$
Next 3 terms: -3, -9, -15
Explicit: $a_n = 27 - 6n$
Recursive: $a_n = a_{n-1} - 6$
 $a_1 = 21$

8) -28, -25, -22, -19, ...

Common Difference: $d = 3$
Next 3 terms: -16, -13, -10
Explicit: $a_n = -31 + 3n$
Recursive: $a_n = a_{n-1} + 3$
 $a_1 = -28$

Find the common difference, write the rule for the sequence, and find the 52nd term.

9) 25, 30, 35, 40, ...

Common Difference: $d = 5$
 $a_{52} = 280$
Explicit: $a_n = 20 + 5n$

10) 37, 42, 47, 52, ...

Common Difference: $d = 5$
 $a_{52} = 292$
Explicit: $a_n = 32 + 5n$

Find the common ratio, write the rule for the sequence, and find the 8th term.

11) 2, 12, 72, 432, ...

Common Ratio: $r = 6$

$a_8 = 559872$

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

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

Common Ratio: $r = -3$

$a_8 = -6561$

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

Evaluate each arithmetic series described.

13) $\sum_{k=5}^{17} (6k - 14)$

676

14) $\sum_{k=2}^{11} 5k$

325

15) $10 + 20 + 30 + 40\dots, n = 20$

2100

16) $15 + 21 + 27 + 33\dots, n = 19$

1311

Evaluate each geometric series described.

17) $\sum_{k=1}^9 5^{k-1}$

488281

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

-1020

19) $-1 + 2 - 4 + 8\dots, n = 6$

21

20) $2 - 12 + 72 - 432\dots, n = 8$

-479890