

Algebra 2 Honors: Chapter 11 Practice

1. Given the sequence: $10, 5, \frac{5}{2}, \frac{5}{4}, \dots$

(a) Write the explicit formula for the sequence.

(b) Generate the next 3 terms. Label appropriately.

2. Write a rule for the n th term of the arithmetic sequence.
 $(-2), 2, 6, 10, \dots$

3. Find the sum.

$$\sum_{n=22}^{64} (-n + 70)$$

4. Given $a_4 = 13$ and $a_9 = 28$, find the explicit formula a_n for the arithmetic sequence.

5. Identify the sequence as arithmetic, geometric, or neither.
1, 1, 2, 6, 24, 120, . . .
6. Write the first five terms of the sequence $a_n = \frac{3n^2 - 1}{-n}$. Simplify your answers if appropriate.
7. Given the following sequence: 6, 10, 14, 18, ...
- (a) Write an explicit formula for the nth term.
- (b) Write a recursive formula for the nth term.
- (c) Find a_{38} .
8. Tell whether the sequence is arithmetic. If it is find the common difference.
- a. -5, -1, 3, 7, 11, ...
- b. $-1, -\frac{1}{3}, \frac{1}{3}, 1, \frac{5}{3}, \dots$
9. The following sequence is arithmetic. Find the missing terms.
12, ____, ____, ____, 18

10. Explain the difference between an arithmetic sequence and a geometric sequence.

11. Evaluate. $\sum_{k=1}^{18} (5k - 4)$

12. Find the first 4 terms of the geometric sequence for which $a_1 = -4$ and $r = -3$.

13. Find a_n given $a_{n-1} = 8x - 3$ and $a_{n+1} = 2x + 5$.

14. Find the sum.

$$\sum_{n=1}^6 (2(-3)^{n-1})$$

15. Find a_{52} and a_{54} given $a_{53} = 10$ and the common difference is -2 .

16. Identify if the given sequences as arithmetic, geometric, or neither. If a sequence is arithmetic, identify the common difference. If a sequence is geometric, identify the common ratio.

(a) 0.8, 1, 8, 64, ...

(b) $\frac{3}{28}, \frac{3}{7}, \frac{12}{7}, \frac{48}{7}, \dots$

(c) -21, -16, -11, -6, ...

17. Identify the sequence as arithmetic, geometric, or neither.

1, 4, 9, 16, 25, ...

18. Write a rule for the n th term of the geometric sequence. 24, -18, $\frac{27}{2}$, $-\frac{81}{8}$, ...

19. Find the S_n for the arithmetic series described.

$$d = 7, n = 18, a_n = 72$$

20. Find the sum of the infinite geometric series $\sum_{k=1}^{\infty} 3 \left(-\frac{3}{2} \right)^{k-1}$.

21. Find the sum of the first 25 terms of the arithmetic series.
 $8 + 15 + 22 + 29 + \dots$

- _____ 22. Find the sum of the first 12 terms of the arithmetic series.
 $-7 + 1 + 9 + 17 + \dots$

(A) 436 (B) 888 (C) 452 (D) 444

23. Find the sum the infinite geometric series.

$$\sum_{n=1}^{\infty} \frac{1}{2} \left(-\frac{2}{5} \right)^{n-1}$$

24. Find the sum of the following arithmetic series using the summation formula.

$$12 + 17 + 22 + \dots + 102$$

25. Rewrite the following series in summation notation. Then find the sum.

$$(-6) + (-15) + (-24) + (-33) + \dots + (-456)$$

26. Find the sum of the infinite geometric series. $2 - \frac{2}{3} + \frac{2}{9} - \dots$

_____ 27. Find the sum of the infinite geometric series $\sum_{k=1}^{\infty} 4\left(\frac{1}{4}\right)^{k-1}$.

Ⓐ 1

Ⓑ $\frac{16}{3}$

Ⓒ $\frac{20}{3}$

Ⓓ $\frac{16}{5}$

28. Identify the sequence as arithmetic, geometric, or neither.
1, 1, 2, 3, 5, 8, 13, ...

Algebra 2 Honors: Chapter 11 Practice Answer Section

1. ANS:

$$(a) a_n = 10 \left[\left(\frac{1}{2} \right)^{n-1} \right]$$

$$(b) a_5 = \frac{5}{8}, a_6 = \frac{5}{16}, a_7 = \frac{5}{32}$$

2. ANS:

$$a_n = 4n - 6$$

3. ANS:

1161

4. ANS:

$$a_n = 3n + 1$$

5. ANS:

Neither

6. ANS:

$$a_1 = -2; a_2 = -5.5 \text{ or } 11/2, a_3 = -26/3, a_4 = -47/4, a_5 = -74/5$$

7. ANS:

$$(a) a_n = 4n + 2$$

$$(b) a_n = a_{n-1} + 4, a_1 = 6$$

$$(c) a_{38} = 154$$

8. ANS:

$$a. \text{ yes, } d = 4$$

$$b. \text{ yes, } d = \frac{2}{3}$$

9. ANS:

13.5, 15, 16.5

10. ANS:

Sample answer: In an arithmetic sequence, each term after the first term is found by adding or subtracting the same number from the previous term, while in a geometric sequence, each term after the first term is found by multiplying the previous term by the same number.

11. ANS:

783

12. ANS:

-4, 12, -36, 108

13. ANS:

$$a_n = 5x + 1$$

14. ANS:

-364

15. ANS:

$$a_{52} = 12, a_{54} = 8$$

16. ANS:
(a) neither
(b) geometric, $r = 4$
(c) arithmetic, $d = 5$

17. ANS:
Neither

18. ANS:
$$a_n = 24 \left(-\frac{3}{4} \right)^{n-1}$$

19. ANS:
225

20. ANS:
 $\frac{6}{5}$

21. ANS:
2300

22. ANS: D

23. ANS:
 $\frac{5}{14}$

24. ANS:
1083

25. ANS:
$$\sum_{n=1}^{51} (-9n + 3), S_{51} = -11781$$

26. ANS:
 $\frac{3}{2}$

27. ANS: B

28. ANS:
Neither