

Introduction to Sequences

Find the next three terms in each sequence.

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

2) 9, 109, 209, 309, 409, ...

3) 0, 3, 8, 15, 24, ...

4) $\frac{1}{2}, \frac{1}{2}, \frac{3}{8}, \frac{1}{4}, \frac{5}{32}, \dots$

5) 4, 16, 36, 64, 100, ...

6) 14, 34, 54, 74, 94, ...

7) $5, \frac{5}{2}, \frac{5}{4}, \frac{5}{8}, \frac{5}{16}, \dots$

8) -9, 101, -999, 10001, -99999, ...

Find the tenth term in each sequence.

9) $-1, \frac{2}{3}, \frac{7}{3}, 4, \frac{17}{3}, \dots$

10) $-2, -\frac{3}{2}, -\frac{6}{5}, -1, -\frac{6}{7}, \dots$

11) -2, -6, -18, -54, -162, ...

12) -23, -18, -13, -8, -3, ...

13) -4, 12, -36, 108, -324, ...

14) -6, -2, 0, 1, $\frac{3}{2}, \dots$

15) -28, 172, 372, 572, 772, ...

16) 37, 46, 55, 64, 73, ...

Find the first four terms in each sequence.

17) $a_n = \frac{2n+1}{n^3}$

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

19) $a_n = (2n)^2$

20) $a_n = -2^{n-1}$

21) $a_n = n^2 + 1$

22) $a_n = \frac{n^3}{2n+1}$

Find the tenth term in each sequence.

23) $a_n = \frac{2n+1}{n^3}$

24) $a_n = 4^{n-1}$

25) $a_n = 28 + 5n$

26) $a_n = n^2$

27) $a_n = (2n)^2$

28) $a_n = (2n - 1)^2$

Find the first four terms in each sequence.

29) $a_n = a_{n-1} + 10$
 $a_1 = 29$

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

31) $a_n = a_{n-1} + 4$
 $a_1 = 36$

32) $a_n = a_{n-1} + n$
 $a_1 = 6$

33) $a_n = a_{n-1} + n$
 $a_1 = -4$

34) $a_n = \frac{2 + a_{n-1}}{2}$
 $a_1 = 10$

Find the tenth term in each sequence.

35) $a_n = a_{n-1} + n$
 $a_1 = 8$

36) $a_n = na_{n-1}$
 $a_1 = -1$

37) $a_n = a_{n-1} + 10$
 $a_1 = 11$

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

39) $a_n = \frac{2 + a_{n-1}}{2}$
 $a_1 = -14$

40) $a_n = a_{n-1} \cdot -2$
 $a_1 = -3$

Write the explicit formula for each sequence.

41) $-12, -9, -6, -3, 0, \dots$

42) $-6, -3, -2, -\frac{3}{2}, -\frac{6}{5}, \dots$

Write the recursive formula for each sequence.

43) $2, 4, 7, 11, 16, \dots$

44) $15, 215, 415, 615, 815, \dots$

Introduction to Sequences

Find the next three terms in each sequence.

1) 1, -3, 9, -27, 81, ...
-243, 729, -2187

3) 0, 3, 8, 15, 24, ...
35, 48, 63

5) 4, 16, 36, 64, 100, ...
144, 196, 256

7) $5, \frac{5}{2}, \frac{5}{4}, \frac{5}{8}, \frac{5}{16}, \dots, \frac{5}{32}, \frac{5}{64}, \frac{5}{128}$

2) 9, 109, 209, 309, 409, ...
509, 609, 709

4) $\frac{1}{2}, \frac{1}{2}, \frac{3}{8}, \frac{1}{4}, \frac{5}{32}, \dots, \frac{3}{32}, \frac{7}{128}, \frac{1}{32}$; Note: $a_n = \frac{n}{2^n}$

6) 14, 34, 54, 74, 94, ...
114, 134, 154

8) -9, 101, -999, 10001, -99999, ...
1000001, -9999999, 100000001

Find the tenth term in each sequence.

9) $-1, \frac{2}{3}, \frac{7}{3}, 4, \frac{17}{3}, \dots$
 $a_{10} = 14$

11) -2, -6, -18, -54, -162, ...
 $a_{10} = -39366$

13) -4, 12, -36, 108, -324, ...
 $a_{10} = 78732$

15) -28, 172, 372, 572, 772, ...
 $a_{10} = 1772$

10) $-2, -\frac{3}{2}, -\frac{6}{5}, -1, -\frac{6}{7}, \dots$ $a_{10} = -\frac{1}{2}$

12) -23, -18, -13, -8, -3, ...
 $a_{10} = 22$

14) -6, -2, 0, 1, $\frac{3}{2}, \dots$ $a_{10} = \frac{127}{64}$

16) 37, 46, 55, 64, 73, ...
 $a_{10} = 118$

Find the first four terms in each sequence.

17) $a_n = \frac{2n+1}{n^3}$ 3, $\frac{5}{8}, \frac{7}{27}, \frac{9}{64}$

19) $a_n = (2n)^2$
4, 16, 36, 64

21) $a_n = n^2 + 1$
2, 5, 10, 17

18) $a_n = 3^{n-1}$
1, 3, 9, 27

20) $a_n = -2^{n-1}$
-1, -2, -4, -8

22) $a_n = \frac{n^3}{2n+1}$ $\frac{1}{3}, \frac{8}{5}, \frac{27}{7}, \frac{64}{9}$

Find the tenth term in each sequence.

23) $a_n = \frac{2n+1}{n^3}$ $a_{10} = \frac{21}{1000}$

24) $a_n = 4^{n-1}$
 $a_{10} = 262144$

25) $a_n = 28 + 5n$

$a_{10} = 78$

27) $a_n = (2n)^2$

$a_{10} = 400$

Find the first four terms in each sequence.

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

$a_1 = 29$

$29, 39, 49, 59$

31) $a_n = a_{n-1} + 4$

$a_1 = 36$

$36, 40, 44, 48$

33) $a_n = a_{n-1} + n$

$a_1 = -4$

$-4, -2, 1, 5$

26) $a_n = n^2$

$a_{10} = 100$

28) $a_n = (2n - 1)^2$

$a_{10} = 361$

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

$a_1 = -1$

$-1, -2, -4, -8$

32) $a_n = a_{n-1} + n$

$a_1 = 6$

$6, 8, 11, 15$

34) $a_n = \frac{2 + a_{n-1}}{2}$

$a_1 = 10$

$10, 6, 4, 3$

Find the tenth term in each sequence.

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

$a_1 = 8$

$a_{10} = 62$

36) $a_n = na_{n-1}$

$a_1 = -1$

$a_{10} = -3628800$

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

$a_1 = 11$

$a_{10} = 101$

38) $a_n = a_{n-1} \cdot 3$

$a_1 = -3$

$a_{10} = -59049$

39) $a_n = \frac{2 + a_{n-1}}{2}$ $a_{10} = \frac{63}{32}$

$a_1 = -14$

40) $a_n = a_{n-1} \cdot -2$

$a_1 = -3$

$a_{10} = 1536$

Write the explicit formula for each sequence.

41) $-12, -9, -6, -3, 0, \dots$ $a_n = -15 + 3n$

42) $-6, -3, -2, -\frac{3}{2}, -\frac{6}{5}, \dots$ $a_n = -\frac{6}{n}$

Write the recursive formula for each sequence.

43) $2, 4, 7, 11, 16, \dots$ $a_n = a_{n-1} + n$
 $a_1 = 2$

44) $15, 215, 415, 615, 815, \dots$ $a_n = a_{n-1} + 200$
 $a_1 = 15$