

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) 7, 9, 12, 16, 21, ...

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) $a_n = n^2 + 1$

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

Find the tenth term in each sequence.

$$21) a_n = \frac{2n + 1}{n^3}$$

$$22) a_n = 4^{n-1}$$

$$23) a_n = (2n)^2$$

$$24) a_n = (2n - 1)^2$$

Find the first four terms in each sequence.

$$25) a_n = a_{n-1} + 10$$
$$a_1 = 29$$

$$26) a_n = a_{n-1} \cdot 2$$
$$a_1 = -1$$

$$27) a_n = a_{n-1} + n$$
$$a_1 = -4$$

$$28) a_n = \frac{2 + a_{n-1}}{2}$$
$$a_1 = 10$$

Find the tenth term in each sequence.

$$29) a_n = na_{n-1}$$
$$a_1 = -1$$

$$30) a_n = a_{n-1} + 10$$
$$a_1 = 11$$

$$31) a_n = a_{n-1} \cdot 3$$
$$a_1 = -3$$

$$32) a_n = \frac{2 + a_{n-1}}{2}$$
$$a_1 = -14$$

Write the explicit formula for each sequence.

$$33) -12, -9, -6, -3, 0, \dots$$

$$34) -6, -3, -2, -\frac{3}{2}, -\frac{6}{5}, \dots$$

Write the recursive formula for each sequence.

$$35) 2, 4, 7, 11, 16, \dots$$

$$36) 15, 215, 415, 615, 815, \dots$$

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

$\frac{5}{32}, \frac{5}{64}, \frac{5}{128}$

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, ...

$a_{10} = 1772$

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) $a_n = n^2 + 1$

$2, 5, 10, 17$

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

$509, 609, 709$

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

$\frac{3}{32}, \frac{7}{128}, \frac{1}{32}; \text{ Note: } a_n = \frac{n}{2^n}$

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

$114, 134, 154$

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

$1000001, -9999999, 100000001$

10) 7, 9, 12, 16, 21, ...

$a_{10} = 61$

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, ...

$a_{10} = 118$

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

$1, 3, 9, 27$

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

Find the tenth term in each sequence.

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

$$23) a_n = (2n)^2$$
$$a_{10} = 400$$

$$22) a_n = 4^{n-1}$$
$$a_{10} = 262144$$

$$24) a_n = (2n-1)^2$$
$$a_{10} = 361$$

Find the first four terms in each sequence.

$$25) a_n = a_{n-1} + 10$$
$$a_1 = 29$$
$$29, 39, 49, 59$$

$$27) a_n = a_{n-1} + n$$
$$a_1 = -4$$
$$-4, -2, 1, 5$$

$$26) a_n = a_{n-1} \cdot 2$$
$$a_1 = -1$$
$$-1, -2, -4, -8$$

$$28) a_n = \frac{2 + a_{n-1}}{2}$$
$$a_1 = 10$$
$$10, 6, 4, 3$$

Find the tenth term in each sequence.

$$29) a_n = na_{n-1}$$
$$a_1 = -1$$
$$a_{10} = -3628800$$

$$31) a_n = a_{n-1} \cdot 3$$
$$a_1 = -3$$
$$a_{10} = -59049$$

$$30) a_n = a_{n-1} + 10$$
$$a_1 = 11$$
$$a_{10} = 101$$

$$32) a_n = \frac{2 + a_{n-1}}{2}$$
$$a_1 = -14$$
$$a_{10} = \frac{63}{32}$$

Write the explicit formula for each sequence.

$$33) -12, -9, -6, -3, 0, \dots$$
$$a_n = -15 + 3n$$

$$34) -6, -3, -2, -\frac{3}{2}, -\frac{6}{5}, \dots \quad a_n = -\frac{6}{n}$$

Write the recursive formula for each sequence.

$$35) 2, 4, 7, 11, 16, \dots$$
$$a_n = a_{n-1} + n$$
$$a_1 = 2$$

$$36) 15, 215, 415, 615, 815, \dots$$
$$a_n = a_{n-1} + 200$$
$$a_1 = 15$$