

Find the next three terms in each sequence.

1. 2, 4, 12, 48, 240, ...

2. $\frac{3}{2}, \frac{3}{4}, \frac{3}{8}, \frac{3}{16}, \frac{3}{32}, \dots$

Find the first four terms in each sequence, given the explicit formula.

3. $a_n = -3 \cdot 6^{n-1}$

4. $a_n = (2n)^2$

Find the first four terms in each sequence, given the recursive formula.

5.
$$\begin{aligned} a_n &= a_{n-1} \cdot -2 \\ a_1 &= 0.5 \end{aligned}$$

6.
$$\begin{aligned} a_n &= a_{n-1} + 100 \\ a_1 &= 25 \end{aligned}$$

Write the recursive formula for each sequence.

7. -1, -2, -6, -24, -120, ...

8. 25, 10, 4, $\frac{8}{5}$, $\frac{16}{25}$, ...

Evaluate each series.

9. $\sum_{n=3}^9 (100 - n^2)$

10. $\sum_{m=1}^{18} m$

Rewrite each series using sigma notation.

11. $5 + 25 + 125 + 625 + 3125 + 15625$

12. $5 + 10 + 15 + 20$

For each sequence, state if it is arithmetic, geometric, or neither. If it is arithmetic, tell the common difference. If it is geometric, tell the common ratio.

13. $-7, -5, -2, 2, 7, \dots$

14. $4, 12, 36, 108, 324, \dots$

15. $a_n = -25 + 2n$

16. $a_n = -(-2)^{n-1}$

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

$-11, -1, 9, 19, \dots$

Find a_{20}

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

$3, -12, 48, -192, \dots$

Find a_{10}

In 19 – 20, find the sum of the first n terms indicated in part (a). The, for part (b), find n for the given sum.

19. $1 + 4 + 16 + 64 + \dots$

(a) Sum of the first 10 terms?

(b) For which term would $S_n = 89,478,485$

20. $50 + 42 + 34 + 26 + \dots$

(a) Sum of the first 13 terms?

(b) For each term would $S_n = -1150$?