

Warm Up

Find the common ratio or difference for the following sequences.

5, 7, 9, 11, 13, 15. . .

1, 3, 9, 27, 81, 243. . .

Answers

Write an explicit formula for the following sequences.

5, 7, 9, 11, 13, 15. . .

$$a_n = 2n + 3$$

2. 1, 3, 9, 27, 81, 243. . .

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

Series and Summation Notation

Series

A series is the **sum** of the terms in a sequence.

$$3 + 6 + 9 + 12 + 15 + 18 + 21 + 24 + 27 = 135$$

Series Formulas

Arithmetic
Series

$$S_n = \frac{n}{2}(a_1 + a_n)$$

Geometric
Series

$$S_n = \frac{a_1 \cdot (1 - r^n)}{(1 - r)}$$

Steps for Evaluating a Series

Determine if the terms in the series are arithmetic or geometric.

- Common difference or common ratio?

Substitute the information you are given into the appropriate formula.

Example 1

Evaluate a series with the terms 1, 7, 13, 19, 25
for the first 13 terms.

