Name _____ Date _____

Writing Expressions for Geometric Sequences - Step-by-Step Lesson

Write an equation to describe the sequence below. Use n to represent the position of a term in the sequence, where n = 1 for the first term.

-3, -9, -12,…..

Write your answer using decimals and integers.

$\square\ (\square)^{n-1}$

Explanation:

The formula for the n^{th} term of a geometric sequence is

$a^n = a_1 r^{n-1}$

a^n is the n^{th} term

a_1 is the first term

r is the common ratio and n is the position of a term in the sequence.

we have find a_1, the first term in the sequence.

-3, -9, -27, …..

The first term, a_1, is – 3.

Next find r, the common ratio between consecutive terms.

-3, $\xrightarrow{\times 3}$ -9, $\xrightarrow{\times 3}$ -27

The common ratio, r, is 3

Finally, plug $a_1 = -3$ and $r = 3$ into the formula.

$a_n = a_1 (r)^{n-1}$

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

The sequence -3,-9,-27, ….is described by the equation $a_n = -3 (3)^{n-1}$