Geometric Sequences

Name:

Date:

Determine if the sequence is geometric. If it is, find the common ratio.

1) $-1, -5, -25, -75, \ldots$

2) $2,6,18,54, \ldots$

3) $-2, -1, -\frac{1}{2}, -\frac{1}{4}, \ldots$

Given the first term and the common ratio of a geometric sequence find the first five terms and the explicit formula.

4) $a_1 = 5, r = 5$

5) $a_1 = 7, r = 3$

6) $a_1 = -2, r = 4$

Given the recursive formula for a geometric sequence find the common ratio, the first five terms and the explicit formula.

7) $a_n = a_{n-1}.5, a_1 = -2$

8) $a_n = a_{n-1}.4, a_1 = 3$

9) $a_n = a_{n-1}.(-3), a_1 = -2$

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Answers

Determine if the sequence is geometric. If it is, find the common ratio.

1) $-1, -5, -25, -75, \ldots \Rightarrow r = 5$

2) $2,6,18,54, \ldots \Rightarrow r = 3$

3) $-2, -1, -\frac{1}{2}, -\frac{1}{4}, \ldots \Rightarrow r = \frac{1}{2}$

Given the first term and the common ratio of a geometric sequence find the first five terms and the explicit formula.

4) $a_1 = 5, r = 5$ First five terms: $5,25,75,375,1875$
Explicit: $a_n = 5(5)^{n-1}$

5) $a_1 = 7, r = 3$ First five terms: $7,21,63,189,567$
Explicit: $a_n = 7(3)^{n-1}$

6) $a_1 = -2, r = 4$ First five terms: $-2, -8, -32, -160, -800$
Explicit: $a_n = -2(4)^{n-1}$

Given the recursive formula for a geometric sequence find the common ratio, the first five terms and the explicit formula.

7) $a_n = a_{n-1}.5, a_1 = -2$ Common ratio: $r = 5$
First five terms: $-2, -10, -50, -250, -1250$
Explicit: $a_n = -2(5)^{n-1}$

8) $a_n = a_{n-1}.4, a_1 = 3$ Common ratio: $r = 4$
First five terms: $3,12,48,96,384$
Explicit: $a_n = 3(4)^{n-1}$

9) $a_n = a_{n-1}.(-3), a_1 = -2$ Common ratio: $r = -3$
First five terms: $-2,6, -18,54, -162$
Explicit: $a_n = -2(-3)^{n-1}$