Geometric Sequences

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

1) $1, -7, 49, -343, \ldots$

2) $-3, -12, -48, -192, \ldots$

3) $8, 24, 48, 240, \ldots$

4) $-5, -10, -20, -40, \ldots$

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

5) $a_1 = 0.4, r = -3$

6) $a_1 = 0.2, r = 4$

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

7) $a_n = a_{n-1} \times 4, a_1 = 2$

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

9) $a_n = a_{n-1} \cdot 5, a_1 = 0.2$

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

Given two terms in a geometric sequence find the 6th term and the recursive formula.

11) $a_3 = 576$ and $a_5 = 36$

12) $a_2 = -0.4$ and $a_4 = -1.6$

Answers of Worksheets

Geometric Sequences

1) $r = -7$
2) $r = 4$
3) not geometric
4) $r = 2$
5) First Five Terms: $0.4, -1.2, 3.6, -10.8, 32.4$

   Explicit: $a_n = 0.4 \times (-3)^{n-1}$
6) First Five Terms: $0.2, 0.8, 3.2, 12.8, 51.2$

   Explicit: $a_n = 0.2 \times (4)^{n-1}$
7) Common Ratio: $r = 4$

   First Five Terms: $2, 8, 32, 128, 512$

   Explicit: $a_n = 2 \cdot (4)^{n-1}$
8) Common Ratio: $r = -2$

   First Five Terms: $-4, 8, -16, 32, -64$

   Explicit: $a_n = -4 \cdot (-2)^{n-1}$
9) Common Ratio: $r = 5$

   First Five Terms: $0.2, 1, 5, 25, 125, 625$

   Explicit: $a_n = 0.2 \cdot (5)^{n-1}$
10) Common Ratio: $r = 3$

    First Five Terms: $-3, -9, -27, -81, -243$

    Explicit: $a_n = -3 \cdot (3)^{n-1}$
11) $a_6 = -9$, Recursive: $a_n = a_{n-1} \cdot (\frac{-1}{4})$, $a_1 = 9{,}216$
12) $a_6 = -6.4$, Recursive: $a_n = a_{n-1} \cdot (-2)$, $a_1 = 0.2$