

Structure in Expressions - Worksheet 3

Answer Key

Identify the sequence as arithmetic, geometric, or neither:

1. 0, 1, 1, 2, 3, 5, 6, 13,

The answer is neither. There is no common difference or common ratio.

2. -16, -13, -10, -7, -4, -1, 2,

The answer is arithmetic. Each term is three more than the preceding term, so the common difference is 3.

3. -10, -20, -40, -80, -160, -320,

The answer is geometric. Each number is two times the previous number, so the common ratio is 2.

4. 1, 0.1, 0.01, 0.001, 0.0001,

The answer is neither. Each term, starting with the third term, is the sum of the previous two terms.

5. $\frac{a^2}{b^5}, \frac{a}{b^4}, \frac{1}{b^3}, \frac{1}{ab^2}, \frac{1}{a^2b}, \frac{1}{a^3}, \frac{b}{a^4}, \frac{b^2}{a^5}, \dots$

The answer is geometric. Each term is

the previous term multiplied by $\frac{a}{b}$, thus the common ratio is $\frac{a}{b}$.

Use the geometric series formula to calculate the sum of the *first 5* terms of the following geometric sequences.:

6. -1.5, -3, -6, -12, -24, -48....
-46.5.

7. 0.3, -0.9, 2.7, -8.1, 24.3, ...
18.3.

8. $1, \frac{1}{2}, \frac{1}{4}, \frac{1}{8}, \frac{1}{16}, \dots$
 $\frac{31}{16}$.

9. $1, \frac{1}{2}, \frac{1}{4}, \frac{1}{8}, \frac{1}{16}, \dots$
 $\frac{31}{16}$.

10. $\frac{a^2}{b^5}, \frac{a}{b^4}, \frac{1}{b^3}, \frac{1}{ab^2}, \frac{1}{a^2b}, \frac{1}{a^3}, \frac{b}{a^4}, \frac{b^2}{a^5}, \dots$
 $\frac{a^5 - b^5}{a^2b^5(a-b)}$.