Sequence

Finite Sequence

Example:

Infinite Sequence

Example:

Term Notation

- The first term in a sequence is denoted _____.
- Each subsequent term is denoted _____, where ____ is the term number in the sequence.

Example: Given {1, 5, 9, 13, 17, ...}, identify the following term values:

a_1 : _____ a_4 : _____ a_9 : _____ a_{12} : _____

Sequences as Functions

Since each term value is paired with exactly one term number, a sequence is a function with the following properties:

The **domain** is the set of _____ _____.

n	1	2	3	4	5
a_n	1	5	9	13	17

The **range** is the set of _____ _____.

In an infinite set, the domain is the the set of _____

Recursive Formulas

The Fibonnaci Sequence: _____

In this sequence, $a_1 = 0$, $a_2 = 1$, then for each subsequent term,

_____

Examples

Directions: Find the first 5 terms of each sequence.

$a_1 = 14;\ a_n = a_{n-1} + 9$ (for $n \geq 2$)

$a_1 = 6;\ a_n = 2a_{n-1} - 5$ (for $n \geq 2$)

Explicit Formulas

Examples

Directions: Find the first 5 terms of each sequence.

$a_n = 7(n-3)$

$a_n = \left(\frac{1}{3}\right)^{n+1}$

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SERIES

Sequence	{1, 2, 3, 4}	{3, 6, 9, 12,...}	$\left\{\frac{1}{2}, \frac{1}{4}, \frac{1}{8}, \frac{1}{16}, \ldots\right\}$
Series			

PARTIAL SUMS

Directions: Find the partial sum for each given sequence.

1. {1, 2, 3, 4, 5,...}; find S_9

2. {4, 7, 13, 25, 49,...}; find S_4

3. {1, 4, 9, 16, 25,...}; find S_6

4. $\left\{1, \frac{1}{2}, \frac{1}{3}, \frac{1}{4}, \frac{1}{5}, \ldots\right\}$; find S_3

SUMMATION *Notation*

A way to represent a series using the greek letter Σ to denote the sum.

$$\sum_{n=1}^{5} 2n$$

Find the sum of the series above:

EXAMPLES

Directions: Expand each series and evaluate.

5. $\sum_{n=1}^{12}(n-1)$

6. $\sum_{n=1}^{7}(-3n)$

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