Chapter 9   Sequences, Series, and Probability

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Section 9.1   Sequences and Series

Objective: In this lesson you learned how to use sequence, factorial, and summation notation to write the terms and sum of a sequence.

Important Vocabulary   Define each term or concept.

Terms of a seque nce

I. Sequences (Pages 626–628)

An **infinite sequence** is . . .

What you should learn
How to use sequence notation to write the terms of a sequence

A **finite sequence** is . . .

To find the first three terms of a sequence, given an expression for its nth term, . . .

Example :   Find the first five terms of the sequence given by
$$a_n = 5 + 2n(\square 1)^n.$$

II. Factorial Notation (Pages 828–629)

If n is a positive integer, n **factorial** is defined by

What you should learn
How to use factorial notation

_____

By definition, zero factorial is _____ .

Example :   Evaluate the factorial expression $\dfrac{n!}{(n+1)!}$.

III. Summation Notation (Page 610)

The sum of the first n terms of a sequence is represented by the
summation or sigma notation,

$$\sum_{i=1}^{n} a_i = \underline{\hspace{4cm}}$$

where i is called the _____ , n is the

_____ , and 1 is the _____

_____ .

Example :   Find the following sum: $\displaystyle\sum_{i=2}^{7} (2+3i)$.

IV. Series (Page 611)

The sum of the terms of a finite or infinite sequence is called a

_____ .

Consider the infinite sequence $a_1, a_2, a_3, \ldots , a_i, \ldots$. The sum of all

terms of the infinite sequence is called a(n) _____

and is denoted by $a_1 + a_2 + a_3 + \cdots + a_i + \cdots = \displaystyle\sum_{i=1}^{\infty} a_i$. The sum of

the first n terms of the sequence is called a(n) _____

or the _____ of the sequence and is denoted by

$$a_1 + a_2 + a_3 + \cdots + a_n = \sum_{i=1}^{n} a_i \ .$$

Homework Assignment

Page(s)

Exercises