Core Pure 1

Chapter 3: Series

Chapter Overview

1. Sum of 1’s and Integers

2. Breaking down summations

3. Sum of Square and Cubes

4. Dealing with bounds



Starter

Write out the following series:

Calculate:

The Sum of 1, n times

Example:

Test your Understanding:

The sum of the first n natural numbers

Examples:

Evaluate

Test Your Understanding:

Evaluate:

Further Examples:

2. Show that
(for )

1. Show that

Test Your Understanding:



Show that

Breaking up Summations



Examples:



Combining the previous 2 statements leads to the following result:

Examples

2.

Hence evaluate

Test Your Understanding

1. Show that and hence evaluate

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Sums of Squares and Cubes

Example

 (a) Show that

(b) Verify that the result is true for and .

Example:

Find the sum of the following series

and hence evaluate

Test Your Understanding



2. 

Extension: Given that is even, determine

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