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:

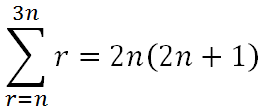
Evaluate:

Further Examples:

2. Show that  
(for )

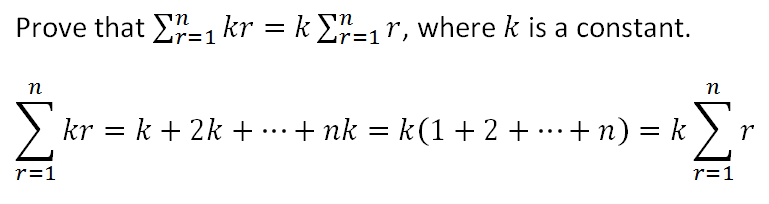
1. Show that

Test Your Understanding:

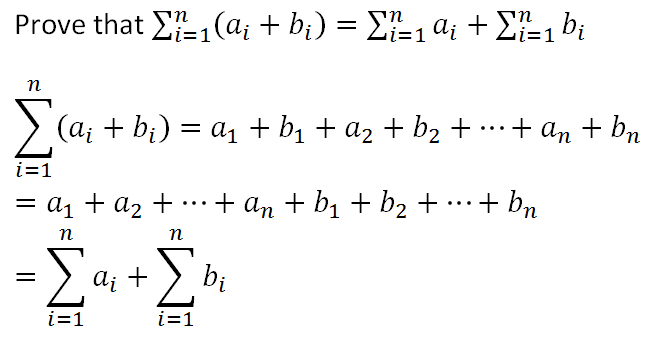


Show that

Breaking up Summations

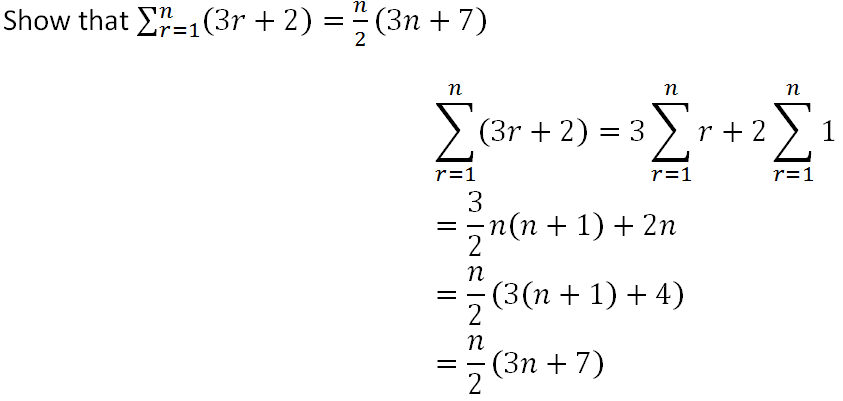


Examples:



Combining the previous 2 statements leads to the following result:

Examples

2.

Hence evaluate

Test Your Understanding

1. Show that and hence evaluate

Exercise 3A Page 46-47

Sums of Squares and Cubes

Example

(a) Show that

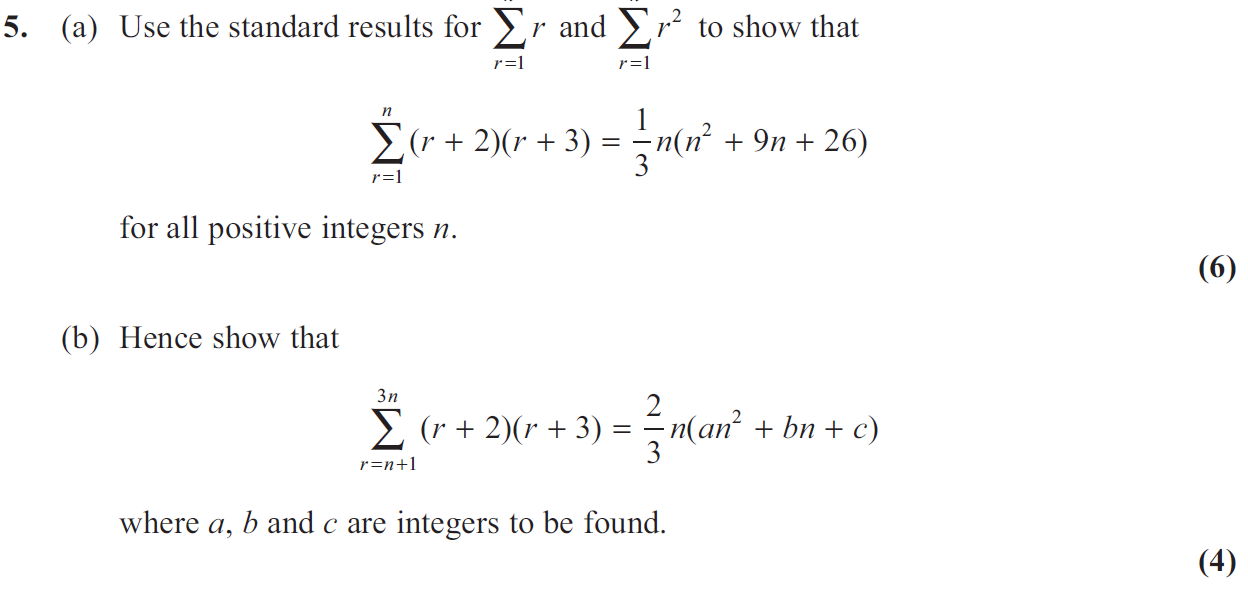
(b) Verify that the result is true for and .

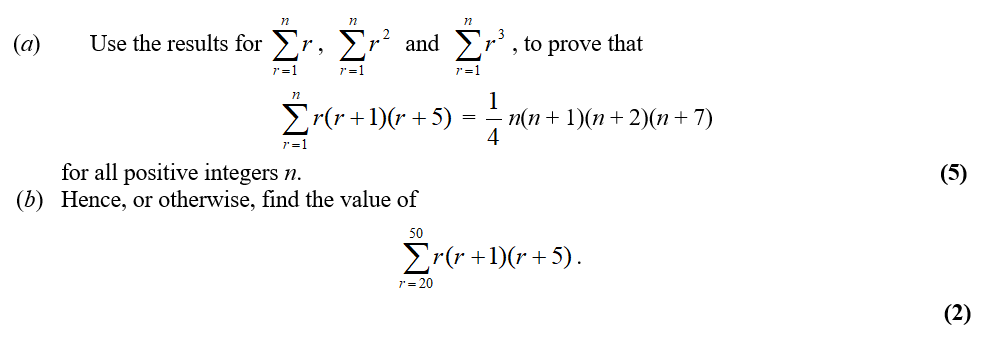
Example:

Find the sum of the following series

and hence evaluate

Test Your Understanding



2. 

Extension: Given that is even, determine

Exercise 3B Page 46-47