

Questions: Further sigma notation

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Summary

Questions relating to the guide on sigma notation

Before attempting these questions, it is highly recommended that you read [Guide: Introduction to sigma notation](#) and [Guide: Further sigma notation](#).

Q1

Simplify the following double sums by writing them as products as sums and applying the properties of sums

4.1

$$\sum_{i=1}^8 \sum_{j=3}^6 3ij^2$$

4.2

$$\sum_{i=1}^n \sum_{j=1}^k i(j+5)$$

Q2

Express the following as double sums in their simplest possible form.

5.1

$$(3 + 9 + 27 + 81)(1 + 8 + 64)$$

5.2

$$\sum_{i=1}^n (i+2) \sum_{i=1}^n i$$

5.3

$$\sum_{i=1}^n (i+2) \sum_{i=1}^n i^2$$

5.4

$$\sum_{i=1}^n (i+2) \sum_{i=1}^n (i+9)$$

Q3

Simplify the following:

6.1

$$\sum_{i=1}^n (i-1)(2i+1)$$

6.2

$$\sum_{i=1}^n i(i+3)(i+6)$$

6.3

$$\sum_{i=1}^n i(2i-3)(3i+1)$$