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

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