

Answers: Introduction to sigma notation

Ifan Howells-Baines, Mark Toner

Summary

Answers to questions relating to the guide on introduction to sigma notation.

These are the answers to [Questions: Introduction to sigma notation](#).

Please attempt the questions before reading these answers!

Q1

$$1.1. \quad \sum_{i=1}^{10} 2i = 110$$

$$1.2. \quad \sum_{i=2}^{11} i = 65$$

$$1.3. \quad \sum_{i=3}^6 3i = 54$$

$$1.4. \quad \sum_{i=1}^5 i^3 = 225$$

$$1.5. \quad \sum_{i=2}^6 5i^2 = 455$$

$$1.6. \quad \sum_{i=3}^6 2 = 8$$

$$1.7. \quad \sum_{i=1}^6 j = 6j$$

Q2

$$2.1. \quad 3 + 6 + 9 + 12 = \sum_{i=1}^4 3i$$

$$\begin{aligned}
2.2. \quad & -1 - 2 - 3 - 4 = \sum_{i=1}^4 -i \\
2.3. \quad & 0 + 3 + 9 + 27 + 81 = \sum_{i=0}^4 3^i \\
2.4. \quad & 1 + 1 + 1 + 1 + 1 = \sum_{i=1}^5 1 \\
2.5. \quad & 6 - 12 + 18 - 24 = \sum_{i=1}^4 (-1)^{i+1} 6i \\
2.6. \quad & 8 + 16 + 12 + 4 = \sum_{i=1}^4 4i \\
2.7. \quad & 25 + 20 + 15 + 10 + 5 = \sum_{i=1}^5 5i
\end{aligned}$$

Q3

$$\begin{aligned}
3.1. \quad & \sum_{i=1}^n 2i = 2 \sum_{i=1}^n i \\
3.2. \quad & \sum_{i=1}^n 2i + \sum_{j=1}^n 2i = 4 \sum_{i=1}^n i \\
3.3. \quad & \sum_{i=0}^n 4i + \sum_{i=1}^n 2i = 6 \sum_{i=1}^n i \\
3.4. \quad & \sum_{i=2}^n 2i - \sum_{i=1}^n i = -1 + \sum_{i=2}^n i
\end{aligned}$$

Version history and licensing

v1.0: initial version created 08/23 by Ifan Howells-Baines, Mark Toner as part of a University of St Andrews STEP project.

- v1.1: edited 05/24 by tdhc.

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