

IB Maths: AA HL

Simple Proof & Reasoning

Topic Questions

These practice questions can be used by students and teachers and is Suitable for IB Maths AA HL Topic Questions

Course	IB Maths
Section	1. Number & Algebra
Topic	1.4 Simple Proof & Reasoning
Difficulty	Medium

Level: IB Maths

Subject: IB Maths AA HL

Board: IB Maths

Topic: Simple Proof & Reasoning

Question 1

Prove that $(4x - 1)(2x + 3) - (2x + 1)^2 = 2(2x - 1)(x + 2)$.

[3 marks]

Question 2

Prove that $x^2 - 3x + 3$ is positive for all values of x .

[3 marks]

Question 3

Prove that $(a - b)^2 - (a + b)^2 = -4ab$.

[3 marks]

Question 4

Prove that the sum of any three consecutive integers is a multiple of 3.

[3 marks]

Question 5

Prove that $x^2 + 2 \geq 2$ for all values of x ,

[2 marks]

Question 6

Prove that the square of an even number is a multiple of 4.

[3 marks]

Question 7

(a) Factorise $n^2 + 3n + 2$.

[1 marks]

(b) Hence show that $n^3 + 3n^2 + 2n = n(n + 1)(n + 2)$.

[1 marks]

(c) Given that n is even, write down whether $(n + 1)$ and $(n + 2)$ are odd or even.

[2 marks]

(d) Hence deduce whether $n^3 + 3n^2 + 2n$ is odd or even. Justify your answer.

[2 marks]

Question 8

(a) Show that $(3n + 2)^2 - (n + 2)^2 = 8n^2 + 8n$, where $n \in \mathbb{Z}$.

[2 marks]

(b) Hence, or otherwise prove that $(3n + 2)^2 - (n + 2)^2$ is a multiple of 8.

[2 marks]