
Predictive IB Mathematics AA SL Paper 1

May 2025

1 hour 30 minutes

Instructions to candidates

- Write your session number in the boxes above.
- Do not open this examination paper until instructed to do so.
- You are not permitted access to any calculator for this paper.
- Section A: answer all questions. Answers must be written within the answer boxes provided.
- Section B: answer all questions in the answer booklet provided. Fill in your session number on the front of the answer booklet, and attach it to this examination paper and your cover sheet using the tag provided.
- Unless otherwise stated in the question, all numerical answers should be given exactly or correct to three significant figures.
- A clean copy of the *mathematics: analysis and approaches SL formula booklet* is required for this paper.
- The maximum mark for this examination paper is [80 marks].

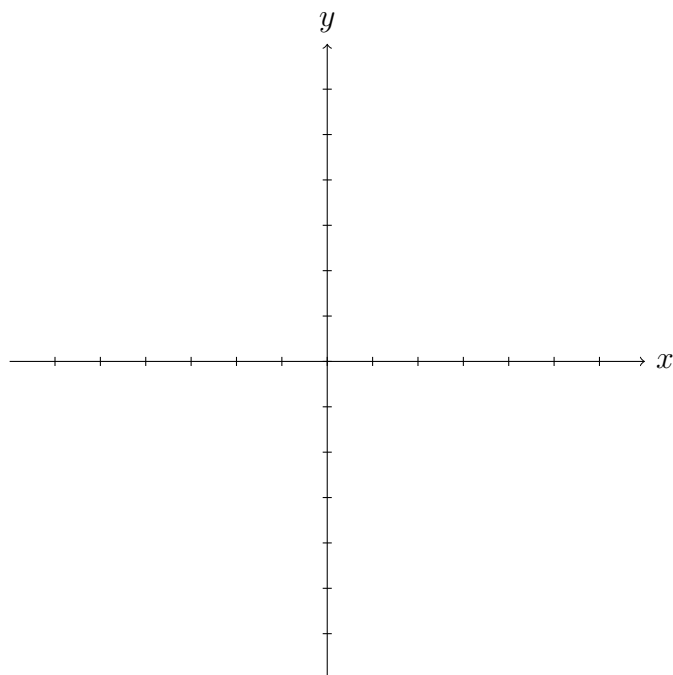
Section A [40 marks]

Answer all questions. Answers must be written within the answer boxes provided. Working may be continued below the lines, if necessary.

1. Given that $\log_3(x + 5) - \log_3(x - 1) = 2$. [6]
(a) Show that this equation can be written as $8x = 14$. [3]
(b) Hence, solve for x . [3]

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2. The function f is defined by $f(x) = \frac{2x-1}{x+3}$ for $x \neq -3$. [7]
(a) Write down the equation of the vertical asymptote of the graph of f . [1]
(b) Write down the equation of the horizontal asymptote of the graph of f . [1]
(c) Find $f^{-1}(x)$. [3]
(d) Sketch the graph of $y = f(x)$, clearly indicating any asymptotes and intercepts with the axes. [2]



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3. A particle P moves along a straight line. Its velocity $v \text{ ms}^{-1}$ at time t seconds is given by [6]
 $v(t) = 6t^2 - 24t + 18$ for $t \geq 0$.

- (a) Find the values of t for which the particle is at rest. [3]
 (b) Find the acceleration of the particle when $t = 2$. [3]

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4. Consider the trigonometric equation $2 \sin^2 x = \cos x + 1$ for $0 \leq x \leq 2\pi$. [7]
 (a) Show that this equation can be written as $2 \cos^2 x + \cos x - 1 = 0$. [2]
 (b) Hence, find all solutions to the equation in the given domain. [5]