



HKDSE Examination Preparation Guide

In order to prepare for the examination effectively, students are advised to read the instruction of the assessment carefully.

A. Public Assessment Format

There is only one examination paper consisting conventional questions alone in the HKDSE Mathematics (Extended Part) Module 2 examination. The following table lists the details of the Module 2 (Algebra and Calculus) examination:

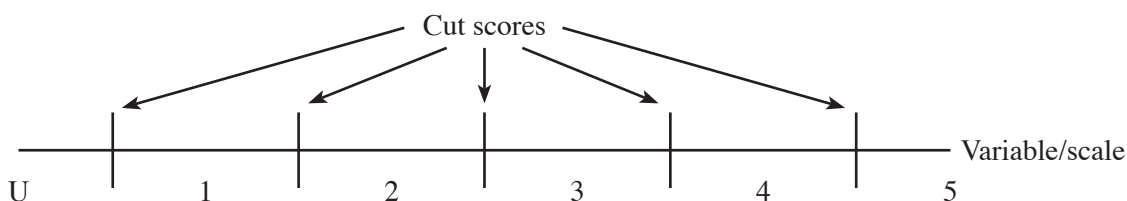
Module 2 (Algebra and Calculus)

Component	Weighting	Duration
Conventional questions	100%	2 ½ hours

The examination paper consists of two sections A and B, in which ALL questions are to be attempted. Section A (50 marks) consists of shorter questions related to the whole Module 2 curriculum. Answers to questions in Section A should be written in the spaces provided in the Question-Answer Book. Section B (50 marks) consists of longer and harder questions related to the whole Module 2 curriculum. Note that the content to be examined includes knowledge of the subject matter in the Mathematics (Compulsory Part) curriculum.

B. Standard Referencing and Reporting of Results

In the HKDSE, standards-referenced reporting will be adopted to report candidates' results. Candidates' levels of performance will be reported with reference to a set of standards as defined by cut scores on the variable or scale for a given subject (see the figure below).



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**MATHEMATICS Extended Part
Module 2 (Algebra and Calculus)**

**Mock Exam 2
Question-Answer Book**

(2½ hours)

This paper must be answered in English

INSTRUCTIONS

- (1) After the announcement of the start of the examination, you should first write your Candidate Number in the space provided on Page 1 and stick barcode labels in the spaces provided on Pages 1, 3, 5, 7, 9 and 11.
- (2) This paper consists of TWO sections, A and B.
- (3) Attempt ALL questions in this paper. Write your answers in the spaces provided in this Question-Answer Book. Do not write in the margins. Answers written in the margins will not be marked.
- (4) Graph paper and supplementary answer sheets will be supplied on request. Write your Candidate Number, mark the question number box and stick a barcode label on each sheet, and fasten them with string INSIDE this book.
- (5) Unless otherwise specified, all working must be clearly shown.
- (6) Unless otherwise specified, numerical answers must be exact.
- (7) No extra time will be given to candidates for sticking on the barcode labels or filling in the question number boxes after the ‘Time is up’ announcement.

Please stick the barcode label here.

Candidate Number

	Marker's Use Only	Examiner's Use Only
Question No.	Marks	Marks
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		
11		
12		
13		
Total		

FORMULAS FOR REFERENCE

$\sin(A \pm B) = \sin A \cos B \pm \cos A \sin B$	$\sin A + \sin B = 2 \sin \frac{A+B}{2} \cos \frac{A-B}{2}$
$\cos(A \pm B) = \cos A \cos B \mp \sin A \sin B$	$\sin A - \sin B = 2 \cos \frac{A+B}{2} \sin \frac{A-B}{2}$
$\tan(A \pm B) = \frac{\tan A \pm \tan B}{1 \mp \tan A \tan B}$	$\cos A + \cos B = 2 \cos \frac{A+B}{2} \cos \frac{A-B}{2}$
$2 \sin A \cos B = \sin(A+B) + \sin(A-B)$	$\cos A - \cos B = -2 \sin \frac{A+B}{2} \sin \frac{A-B}{2}$
$2 \cos A \cos B = \cos(A+B) + \cos(A-B)$	
$2 \sin A \sin B = \cos(A-B) - \cos(A+B)$	

Answers written in the margins will not be marked.

Section A (50 marks)

2017
 1. Find $\frac{d}{dx} \left(\sin \frac{x}{3} \right)$ from first principles.

(4 marks)

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Answers written in the margins will not be marked.

Please stick the barcode label here.

2016

6. (a) By considering $3\theta = 2\theta + \theta$, express $\sin 3\theta$ in the form $A \sin \theta + B \sin^3 \theta$, where A and B are constants.

(b) Using (a), solve the equation $8x^3 - 6x + 1 = 0$.

(7 marks)

Answers written in the margins will not be marked.

Dotted lines for writing answers.

Answers written in the margins will not be marked.

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Section B

2015

10. Define $f(x) = \frac{x^2 + 7}{x + 3}$, where $x \neq -3$. Denote the graph of $y = f(x)$ by G .

- (a) Find $f'(x)$. (2 marks)
- (b) Prove that the maximum value and the minimum value of $f(x)$ are -14 and 2 respectively. (4 marks)
- (c) Find the asymptote(s) of G . (2 marks)
- (d) Sketch G . (2 marks)
- (e) Find the area of the region bounded by G and the horizontal line $y = 11$. (3 marks)

Answers written in the margins will not be marked.

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