

## **Cambridge Assessment International Education**

Cambridge International Advanced Subsidiary Level

CANDIDATE NAME									
CENTRE NUMBER					CANDIDATE NUMBER				
MATHEMATICS	}							97	09/22
Paper 2 Pure M	lathemat	ics 2 <b>(P2</b>	<b>:</b> )			Febr	uary/	Marc	h 2019
						1	hour	15 m	inutes
Candidates ans	wer on th	e Questio	on Pape	er.					
Additional Mater	rials:	List of F	ormulae	(MF9)					

## **READ THESE INSTRUCTIONS FIRST**

Write your centre number, candidate number and name in the spaces at the top of this page.

Write in dark blue or black pen.

You may use an HB pencil for any diagrams or graphs.

Do not use staples, paper clips, glue or correction fluid.

DO NOT WRITE IN ANY BARCODES.

Answer **all** the questions in the space provided. If additional space is required, you should use the lined page at the end of this booklet. The question number(s) must be clearly shown.

Give non-exact numerical answers correct to 3 significant figures, or 1 decimal place in the case of angles in degrees, unless a different level of accuracy is specified in the question.

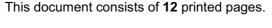
The use of an electronic calculator is expected, where appropriate.

You are reminded of the need for clear presentation in your answers.

At the end of the examination, fasten all your work securely together.

The number of marks is given in brackets [] at the end of each question or part question.

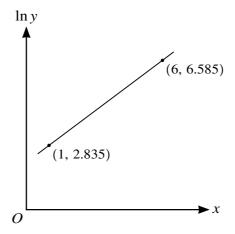
The total number of marks for this paper is 50.





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4x-3 - 6x .	]



The variables $x$ and $y$ satisfy the equation $y = Ae^{px+p}$ , where $\ln y$ against $x$ is a straight line passing through the points (1, 2 diagram. Find the values of $A$ and $p$ .	A and $p$ are constants. The graph of (2.835) and (6, 6.585), as shown in the [5]

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	is 5.	
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(ii)	Show that the equation $4x^3 + 8x^2 + 11x + 4 = 0$ has exactly one real root.	
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(ii)		

e	equation of a curve is $y = \frac{e^{2x}}{4x+1}$ and the point P on the curve has y-coordinate 10.	
i)	Show that the <i>x</i> -coordinate of <i>P</i> satisfies the equation $x = \frac{1}{2} \ln(40x + 10)$ .	[2]
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i)	Use the iterative formula $x_{n+1} = \frac{1}{2} \ln(40x_n + 10)$ with $x_1 = 2.3$ to find the x-coordinate of to 4 significant figures. Give the result of each iteration to 6 significant figures.	
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6 (	a) Show that	$\int_{1}^{4} \left( \frac{2}{x} + \frac{2}{2x+1} \right) dx$	$\int \mathrm{d}x = \ln 48.$		[5]

J 3111 <b>21</b> 7 (8 8 8 7	$x + 2 \csc x dx$ .		
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	7	The	parametric	equations	of a	curve	are
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$$x = 2t - \sin 2t, \quad y = 5t + \cos 2t,$$

for  $0 \le t \le \frac{1}{2}\pi$ . At the point *P* on the curve, the gradient of the curve is 2.

(i)	Show that the value of the parameter at P satisfies the equation $2 \sin 2t - 4 \cos 2t = 1$ .	[4]
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the coordina	ressing $2 \sin 2t$ at each of $P$ . Give	each coordir	nate correct	to 3 signifi	cant figures	_ [
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## **Additional Page**

If you use the following fined page to complete the answer(s) to any question(s), the question number(s) must be clearly shown.

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