

Cambridge International Examinations

Cambridge International Advanced Subsidiary Level

NAME										
CENTRE NUMBER						CANDIDATE NUMBER				
MATHEMATICS									97	09/23
Paper 2 Pure Mat	themati	cs 2 (P	2)					May	//June) 2017
							1	hour	15 mi	nutes
Candidates answe	er on th	e Quest	ion Pa	per.						
Additional Materia	als:	List of F	Formul	lae (MF9	9)					

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.

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.



International Examinations

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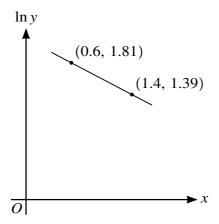
(i) By sketching a suitable pair of graphs, show that the equation

3

	$x^3 = 11 - 2x$	
has exactly one real roo	ot.	[2
Ise the iterative formul	$x_{n+1} = \sqrt[3]{(11 - 2x_n)}$ to 4 significant figures. Give the result	It of each iteration to 6 significa
figures.	to significant rightest circ the result	[3

Give your	quation of th	e form ax +	by + c = 0	where a ,	b and c are	integers.		
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5



The variables x and y satisfy the equation $y = \frac{K}{a^{2x}}$, where K and a are constants. The graph of 3	ln y
against x is a straight line passing through the points (0.6, 1.81) and (1.4, 1.39), as shown in diagram. Find the values of K and a correct to 2 significant figures.	
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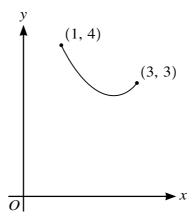
6 (i)	Use the factor theorem to show that $(x + 2)$ is a factor of the expression	
	$6x^3 + 13x^2 - 33x - 70$	
	and hence factorise the expression completely.	[5]
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	7	
Deduce the roots of the eq	uation	
	$6 + 13y - 33y^2 - 70y^3 = 0.$	[2]

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(i)	Find $\int \left(\frac{4}{2x+1} + \frac{1}{2x}\right) dx.$	[2
ii)	Hence find $\int_{1}^{4} \left(\frac{4}{2x+1} + \frac{1}{2x}\right) dx$, giving your answer in the form $\ln k$.	[3

8



The diagram shows the curve with parametric equations

$$x = 2 - \cos 2t$$
, $y = 2\sin^3 t + 3\cos^3 t + 1$

for $0 \le t \le \frac{1}{2}\pi$. The end-points of the curve are (1, 4) and (3, 3).

[5]

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Find the ex	act gradient	of the norm	al to the cu	rve at the p	oint for whi	ch x = 2.	
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