



Cambridge International Examinations

Cambridge International Advanced Subsidiary Level

NAME			
CENTRE NUMBER		CANDIDATE NUMBER	
MATHEMATICS			9709/22
Paper 2 Pure Mather	matics 2 (P2)	Ос	tober/November 2018
			1 hour 15 minutes
Candidates answer o	n the Question Paper.		
Additional Materials:	List of Formulae (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.

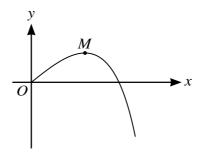
The number of marks is given in brackets [] at the end of each question or part question.

The total number of marks for this paper is 50.



to 4 significant figures.	

3



The diagram shows the curve with equation

$$y = 5\sin 2x - 3\tan 2x$$

for values of x such that $0 \le x < \frac{1}{4}\pi$. Find the x-coordinate of the stationary point M, giving your answer correct to 3 significant figures.

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Find the gradient of the curve					
	4x + 3	$ye^{2x} + y^2 = 10$			
at the point $(0, 2)$.					
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5 The curve with equation

$$y = 5e^{2x} - 8x^2 - 20$$

crosses the x-axis at only one point. This point has coordinates (p, 0).

(i)	Show that <i>p</i> satisfies the equation $x = \frac{1}{2} \ln(1.6x^2 + 4)$.	[2]
		•••••
(ii)	Show by calculation that $0.75 .$	[2]
(ii)	Show by calculation that $0.75 .$	[2]
(ii)	Show by calculation that $0.75 .$	[2]
(ii)	Show by calculation that $0.75 .$	[2]
(ii)	Show by calculation that $0.75 .$	[2]
(ii)	Show by calculation that $0.75 .$	[2]
(ii)	Show by calculation that $0.75 .$	[2]
(ii)	Show by calculation that $0.75 .$	[2]
(ii)	Show by calculation that 0.75 < <i>p</i> < 0.85.	[2]
(ii)		[2]

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ŀ	Find the gradient of the curve at the point $(p, 0)$.	
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6	(a)	Show that $\int_{1}^{6} \frac{12}{3x+2} dx = \ln 256.$	[5]
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	exact value						
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	$8x^3 + 4x^2 - 10x + 3.$	[2]
		••••••
ii)	Show that the equation $2\cos 2\theta = \frac{6\cos \theta - 5}{2\cos \theta + 1}$ can be expressed as	
	$8\cos^{3}\theta + 4\cos^{2}\theta - 10\cos\theta + 3 = 0.$	[3]

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(••• <u>)</u>	C 1 41 4 2 20	$6\cos\theta - 5$	r <i>e</i> n
(111)	Solve the equation $2\cos 2\theta =$	$\frac{6\cos\theta - 5}{2\cos\theta + 1}$ for $0^{\circ} < \theta < 360^{\circ}$.	[5]
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Additional Page

f you use the following lined page to complete the answer(s) to any question(s), the question number(s) nust be clearly shown.

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