

Cambridge International AS & A Level

CANDIDATE NAME			
CENTRE NUMBER		CANDIDATE NUMBER	
MATHEMATIC	cs		9709/22
Paper 2 Pure N	Mathematics 2	A 1.	May/June 2020
		AUE	1 hour 15 minutes
You must answ	er on the question paper.		
Vou will pood:	List of formulae (ME10)		

INSTRUCTIONS

- Answer all questions.
- Use a black or dark blue pen. You may use an HB pencil for any diagrams or graphs.
- Write your name, centre number and candidate number in the boxes at the top of the page.
- Write your answer to each question in the space provided.
- Do not use an erasable pen or correction fluid.
- Do not write on any bar codes.
- If additional space is needed, you should use the lined page at the end of this booklet; the question number or numbers must be clearly shown.
- You should use a calculator where appropriate.
- You must show all necessary working clearly; no marks will be given for unsupported answers from a calculator.
- Give non-exact numerical answers correct to 3 significant figures, or 1 decimal place for angles in degrees, unless a different level of accuracy is specified in the question.

INFORMATION

- The total mark for this paper is 50.
- The number of marks for each question or part question is shown in brackets [].



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figures.							
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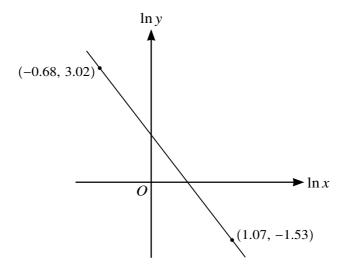


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F	Find the gradient of the curve at the point $(\frac{1}{9}\pi, \frac{1}{6}\pi)$.	
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4



The variables x and y satisfy the equation $y = Ax^{-2p}$, where A and p are constants. The graph of $\ln y$ against $\ln x$ is a straight line passing through the points (-0.68, 3.02) and (1.07, -1.53), as shown in the diagram.

Find the values of A and p .	[5]
	AHEAD



5	(a)	Sketch, on the same diagram, the graphs of $y = 2x - 3 $ and $y = 3x + 5$.	[2]

(b)	Solve the inequality $3x + 5 < 2x - 3 $.	[3]
		HEAD

	6	The po	lynomial	p(x)	is (defined	by
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$$p(x) = 6x^3 + ax^2 - 4x - 3,$$

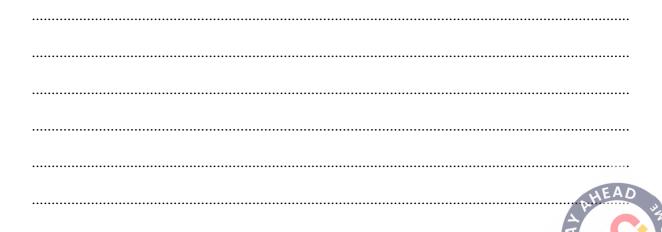
where a is a constant. It is given that (x + 3) is a factor of p(x).

(a)	Find the value of a.	[2]
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(b)	Using this value of a , factorise $p(x)$ completely.	[3]
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		10	
7	It is	given that $\int_0^a \left(\frac{4}{2x+1} + 8x\right) dx = 10$, where a is a positive constant.	
	(a)	Show that $a = \sqrt{2.5 - 0.5 \ln(2a + 1)}$. [4]	<u> </u>]
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Use an iterative formula, based on the equation in part (a), to find the value of a correct 4 significant figures. Give the result of each iteration to 6 significant figures.	Using the equation in part (a), show by calculation that $1 < a < 2$.	
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3 (a)	Show that $3 \sin 2\theta \cot \theta = 6 \cos^2 \theta$.	[2]
.		
(b)	Solve the equation $3 \sin 2\theta \cot \theta = 5$ for $0 < \theta < \pi$.	[3]
		TEAD
		AHEAD

Find the exact value of $\int_{\frac{1}{4}\pi}^{\frac{\pi}{2}} 3 \sin x \cot \frac{1}{2} x dx$.	

Additional Page

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