

Please check the examination details below before entering your candidate information

Candidate surname		Other names	
Pearson Edexcel		Centre Number	Candidate Number
International			
Advanced Level			
Time 1 hours 30 minutes	Paper reference	WFM03/01	
Mathematics International Advanced Subsidiary/Advanced Level Further Pure Mathematics F3			
You must have: Mathematical Formulae and Statistical Tables (Yellow), calculator			Total Marks

Candidates may use any calculator permitted by Pearson regulations. Calculators must not have the facility for symbolic algebra manipulation, differentiation and integration, or have retrievable mathematical formulae stored in them.

Instructions

- Use **black** ink or ball-point pen.
- If pencil is used for diagrams/sketches/graphs it must be dark (HB or B).
- **Fill in the boxes** at the top of this page with your name, centre number and candidate number.
- Answer **all** questions and ensure that your answers to parts of questions are clearly labelled.
- Answer the questions in the spaces provided
– *there may be more space than you need.*
- You should show sufficient working to make your methods clear. Answers without working may not gain full credit.
- Inexact answers should be given to three significant figures unless otherwise stated.

Information

- A booklet 'Mathematical Formulae and Statistical Tables' is provided.
- There are 8 questions in this question paper. The total mark for this paper is 75.
- The marks for each question are shown in brackets
– *use this as a guide as to how much time to spend on each question.*

Advice

- Read each question carefully before you start to answer it.
- Try to answer every question.
- Check your answers if you have time at the end.
- If you change your mind about an answer, cross it out and put your new answer and any working underneath.
- Good luck with your examination.

Turn over ►



$$1 - \tanh^2 x \equiv \operatorname{sech}^2 x \quad (3)$$

giving your answer as an exact logarithm. (3)

Question 1 continued

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

Q1

(Total 6 marks)



$$y = \sqrt{9 - x^2} \quad 0 \leq x \leq 3$$

- The curve is rotated through 2π radians about the x -axis.

- (b) Using calculus, find the exact area of the surface generated. (3)

Question 2 continued

Handwriting practice area with 30 horizontal lines.

DO NOT WRITE IN THIS AREA



DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

Question 2 continued

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

Q2

(Total 7 marks)



$$\mathbf{M} = \begin{pmatrix} 3 & 1 & p \\ 1 & 1 & 2 \\ -1 & p & 2 \end{pmatrix} \text{ where } p \text{ is a real constant}$$

- (4)

(5)

Question 3 continued

Handwriting practice area with 30 horizontal lines.

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

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DO NOT WRITE IN THIS AREA

Question 3 continued

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DO NOT WRITE IN THIS AREA

Q3

(Total 9 marks)



Question 4 continued

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DO NOT WRITE IN THIS AREA



DO NOT WRITE IN THIS AREA

Question 4 continued

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DO NOT WRITE IN THIS AREA

(Total 8 marks)

Q4



Question 5 continued

Handwriting practice area with 25 horizontal lines.

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DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA



DO NOT WRITE IN THIS AREA

Question 5 continued

DO NOT WRITE IN THIS AREA

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DO NOT WRITE IN THIS AREA

Handwriting practice area with 30 horizontal lines.

(Total 10 marks)

Q5

Grading box with two empty cells.



Question 6 continued

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DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA



DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

Question 6 continued

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

Lined area for writing the answer to Question 6.

(Total 13 marks)

Q6



$$(ii) \int_{\sqrt{3}}^3 \frac{\sqrt{x^2 - 3}}{x^2} dx \tag{5}$$

Question 7 continued

DO NOT WRITE IN THIS AREA

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DO NOT WRITE IN THIS AREA



DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

Question 7 continued

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DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

Q7

(Total 8 marks)





Question 8 continued

Handwriting practice area with 30 horizontal lines.

DO NOT WRITE IN THIS AREA



DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

Question 8 continued

Handwriting practice area with 25 horizontal lines.

DO NOT WRITE IN THIS AREA



DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

11

END

TOTAL FOR PAPER: 75 MARKS