

Write your name here

Surname

Other names

**Pearson Edexcel**  
**International GCSE**

Centre Number

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Candidate Number

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# Further Pure Mathematics

## Paper 1

Monday 8 June 2015 – Morning  
**Time: 2 hours**

Paper Reference

**4PM0/01**

**Calculators may be used.**

Total Marks

### Instructions

- Use **black** ink or ball-point pen.
- **Fill in the boxes** at the top of this page with your name, centre number and candidate number.
- Answer **all** questions.
- Without sufficient working, correct answers may be awarded no marks.
- Answer the questions in the spaces provided  
– *there may be more space than you need.*

### Information

- The total mark for this paper is 100.
- 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.
- Check your answers if you have time at the end.

Turn over ►

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**PEARSON**



**Question 1 continued**

Ruled area for writing answers, consisting of multiple horizontal dotted lines.

**(Total for Question 1 is 5 marks)**



2 Given that  $y = 4x^2e^{2x}$

(a) find  $\frac{dy}{dx}$  (3)

(b) hence show that  $x\frac{dy}{dx} = 2y(1+x)$  (2)

Handwriting practice area consisting of 20 horizontal dotted lines.



**Question 2 continued**

Ruled area for writing the answer to Question 2.

**(Total for Question 2 is 5 marks)**





**Question 3 continued**

Dotted lines for writing.

**(Total for Question 3 is 5 marks)**



4 The sum  $S_n$  of the first  $n$  terms of an arithmetic series is given by  $S_n = 2n(10 - n)$

(a) Write down the first term of the series.

(1)

(b) Find the common difference of the series.

(2)

Given that  $S_n > -50$

(c) (i) write down an inequality satisfied by  $n$ ,

(ii) hence find the largest value of  $n$  for which  $S_n > -50$

(4)

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**Question 5 continued**

Handwriting practice area consisting of 25 horizontal dotted lines.



**Question 5 continued**

A series of horizontal dotted lines for writing.



**Question 5 continued**

Handwriting practice area with 25 horizontal dotted lines.

**(Total for Question 5 is 9 marks)**





**Question 6 continued**

Handwriting practice area consisting of 25 horizontal dotted lines.



**Question 6 continued**

A large rectangular area with rounded corners, containing 25 horizontal dotted lines for writing.





**Question 6 continued**

A series of horizontal dotted lines for writing.

**(Total for Question 6 is 10 marks)**





**Question 7 continued**

Ruled area for writing the answer to Question 7.



**Question 7 continued**

A series of horizontal dotted lines for writing.









**Question 8 continued**

A series of horizontal dotted lines for writing.





Question 8 continued

A series of horizontal dotted lines for writing.

**(Total for Question 8 is 17 marks)**



9 A curve  $C$  has equation  $y = \frac{3x + 1}{2x + 3} \quad x \neq -\frac{3}{2}$

(a) Write down an equation of the asymptote of  $C$  which is parallel to

- (i) the  $x$ -axis,
- (ii) the  $y$ -axis.

(2)

(b) Find the coordinates of the points where  $C$  crosses

- (i) the  $x$ -axis,
- (ii) the  $y$ -axis.

(2)

(c) Using the axes opposite, sketch the curve  $C$ , showing clearly the asymptotes and the coordinates of the points where  $C$  crosses the axes.

(3)

The curve  $C$  intersects the  $x$ -axis at the point  $A$ .

The line  $l$  is the normal to  $C$  at  $A$ .

(d) Find an equation for  $l$ .

(5)

The line  $l$  meets  $C$  again at the point  $B$ .

(e) Find the  $x$ -coordinate of  $B$ .

(5)

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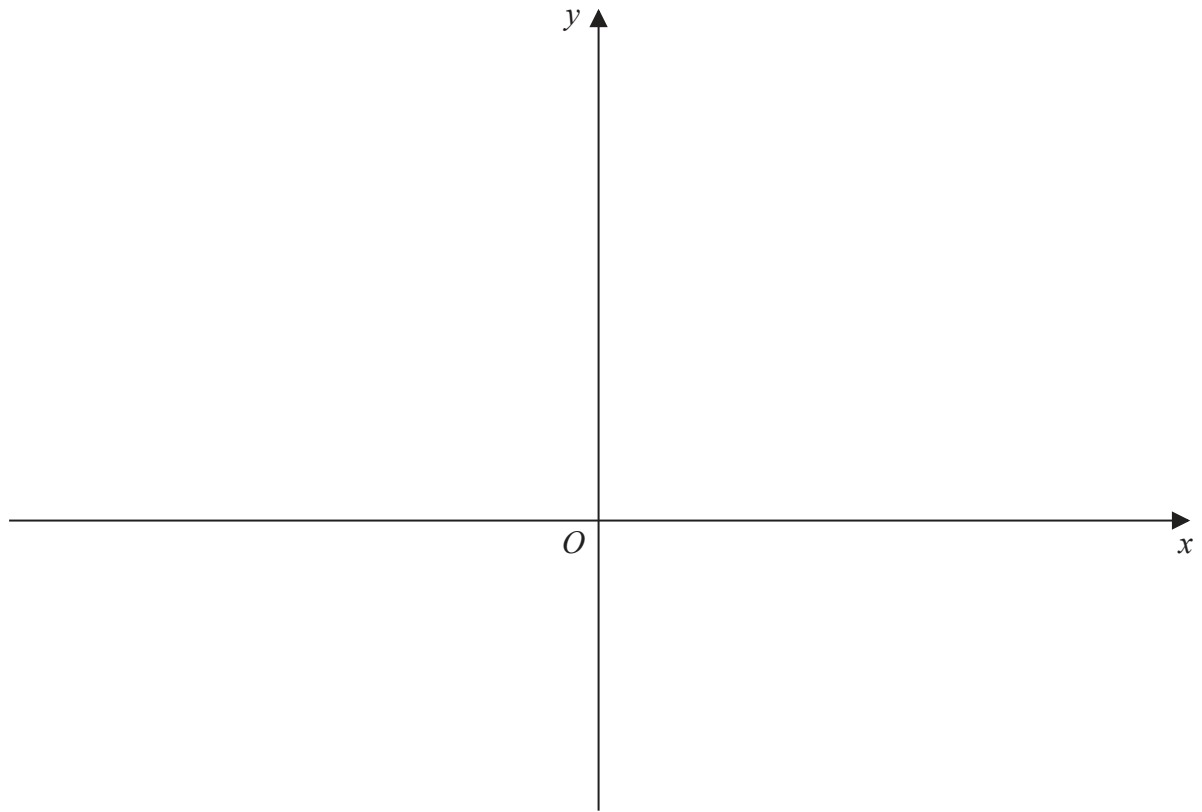
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Question 9 continued



A series of horizontal dotted lines for writing, consisting of 15 lines spaced evenly down the page.



**Question 9 continued**

A series of horizontal dotted lines for writing.







**Question 10 continued**

Handwriting practice area with 25 horizontal dotted lines.



