

Centre No.						Paper Reference							Surname	Initial(s)
Candidate No.						6	6	6	3	/	0	1	Signature	

Paper Reference(s)

6663/01

Edexcel GCE

Core Mathematics C1

Advanced Subsidiary

Friday 13 January 2012 – Morning
Time: 1 hour 30 minutes



Examiner's use only

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Team Leader's use only

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[illegible]

Materials required for examination

Mathematical Formulae (Pink)

Items included with question papers

Nil

Calculators may NOT be used in this examination.

Instructions to Candidates

In the boxes above, write your centre number, candidate number, your surname, initials and signature. Check that you have the correct question paper.

Answer ALL the questions.

You must write your answer to each question in the space following the question.

Information for Candidates

A booklet 'Mathematical Formulae and Statistical Tables' is provided.

Full marks may be obtained for answers to ALL questions.

The marks for individual questions and the parts of questions are shown in round brackets: e.g. (2).

There are 10 questions in this question paper. The total mark for this paper is 75.

There are 28 pages in this question paper. Any blank pages are indicated.

Advice to Candidates

You must ensure that your answers to parts of questions are clearly labelled.

You should show sufficient working to make your methods clear to the Examiner.

Answers without working may not gain full credit.

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PEARSON

1. Given that $y = x^4 + 6x^{\frac{1}{2}}$, find in their simplest form

$$(b) \int y \, dx \tag{3}$$

Q1

101

(Total 6 marks)



Q2

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(Total 6 marks)



Q3

1049

(Total 6 marks)



4. A sequence x_1, x_2, x_3, \dots is defined by

$$x_1 = 1$$

$$x_{n+1} = ax_n + 5, \quad n \geq 1$$

(a) Write down an expression for x_2 in terms of a .

(1)

(b) Show that $x_3 = a^2 + 5a + 5$

(2)

Given that $x_3 = 41$

(c) find the possible values of a .

(3)



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Question 4 continued

Q4

(Total 6 marks)



5. The curve C has equation $y = x(5 - x)$ and the line L has equation $2y = 5x + 4$

(a) Use algebra to show that C and L do not intersect.

(4)

(b) In the space on page 11, sketch C and L on the same diagram, showing the coordinates of the points at which C and L meet the axes.

(4)



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Question 5 continued

Q5

(Total 8 marks)



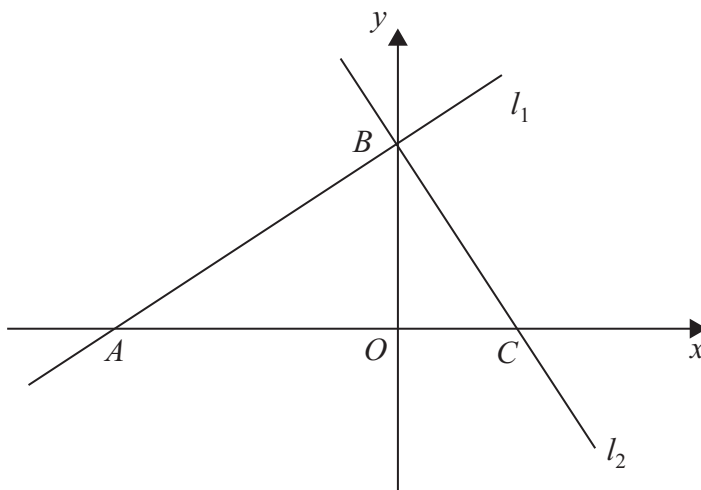


Figure 1

(a) Find the gradient of l_1 .

(1)

The line l_2 is perpendicular to l_1 and passes through B .

(b) Find an equation of l_2 .

(3)

The line l_2 crosses the x -axis at the point C .

(c) Find the area of triangle ABC .

(4)



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(Total 8 marks)

Q6



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(Total 5 marks)

Q7



8. The curve C_1 has equation

$$y = x^2(x + 2)$$

- (2)

- (3)

- (2)

The curve C_2 has equation

$$y = (x - k)^2(x - k + 2)$$

where k is a constant and $k > 2$

- (3)

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Question 8 continued



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Question 8 continued

Q8

(Total 10 marks)





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(Total 9 marks)

Q9

10.

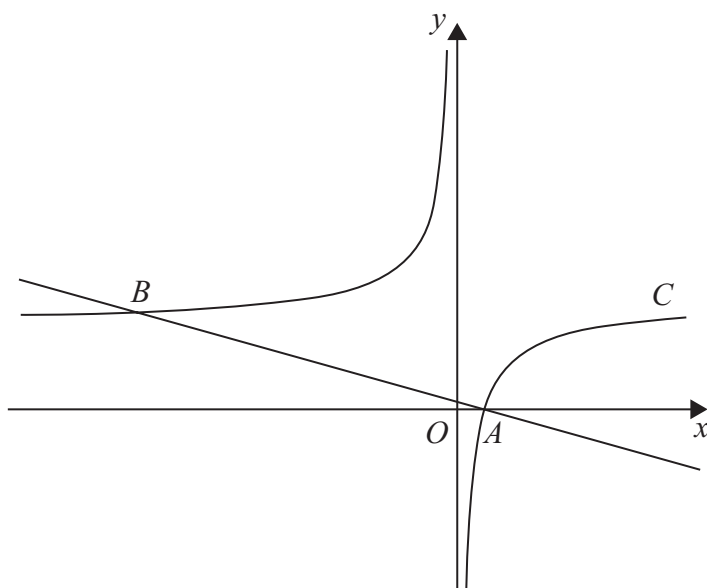


Figure 2

Figure 2 shows a sketch of the curve C with equation

$$y = 2 - \frac{1}{x}, \quad x \neq 0$$

The curve crosses the x -axis at the point A .

(a) Find the coordinates of A .

(1)

(b) Show that the equation of the normal to C at A can be written as

$$2x + 8y - 1 = 0$$

(6)

The normal to C at A meets C again at the point B , as shown in Figure 2.

(c) Find the coordinates of B .

(4)





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Question 10 continued

Q10

(Total 11 marks)

TOTAL FOR PAPER: 75 MARKS

END

