

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

Monday 13 May 2013 – Afternoon

Time: 1 hour 30 minutes

Examiner's use only

--	--	--

Team Leader's use only

--	--	--

[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 for 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 11 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.

This publication may be reproduced only in accordance with Pearson Education Ltd copyright policy.
©2013 Pearson Education Ltd.

Printer's Log. No.

Printer's Log. No.
P41802A

W850/R6663/57570 5/5/5/5/6/



Turn over

PEARSON

Leave
blank

1. Simplify

$$\frac{7 + \sqrt{5}}{\sqrt{5} - 1}$$

giving your answer in the form $a + b\sqrt{5}$, where a and b are integers.

(4)

Q1

(Total 4 marks)



Leave
blank

2. Find

$$\int \left(10x^4 - 4x - \frac{3}{\sqrt{x}} \right) dx$$

giving each term in its simplest form.

(4)

Q2

(Total 4 marks)



P 4 1 8 0 2 A 0 3 2 8

Leave
blank

3. (a) Find the value of $8^{\frac{5}{3}}$

(2)

(b) Simplify fully $\frac{\left(2x^{\frac{1}{2}}\right)^3}{4x^2}$

(3)



Q3

(Total 5 marks)



Leave
blank

- $$\begin{aligned} a_1 &= 4 \\ a_{n+1} &= k(a_n + 2), \quad \text{for } n \geq 1 \end{aligned}$$

(a) Find an expression for a_2 in terms of k .

(1)

Given that $\sum_{i=1}^3 a_i = 2$,

- (b) find the two possible values of k .

(6)



Leave
blank

Question 4 continued

Q4

(Total 7 marks)





Q5

(Total 6 marks)



6. The straight line L_1 passes through the points $(-1, 3)$ and $(11, 12)$.

- (a) Find an equation for L_1 in the form $ax + by + c = 0$,

where a, b and c are integers.

(4)

The line L_2 has equation $3y + 4x - 30 = 0$.

- (b) Find the coordinates of the point of intersection of L_1 and L_2 .

(3)



Leave
blank

Question 6 continued

Q6

(Total 7 marks)



Q7

(Total 7 marks)



8.

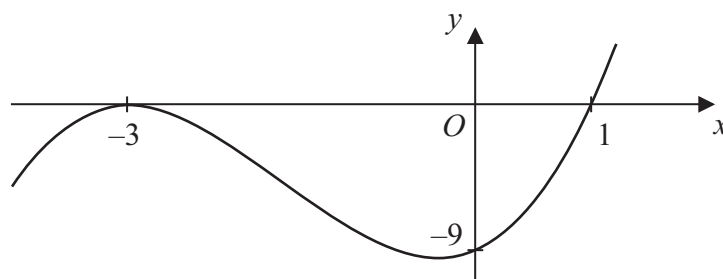
**Figure 1**

Figure 1 shows a sketch of the curve with equation $y = f(x)$ where

$$f(x) = (x + 3)^2 (x - 1), \quad x \in \mathbb{R}.$$

The curve crosses the x -axis at $(1, 0)$, touches it at $(-3, 0)$ and crosses the y -axis at $(0, -9)$

- (a) In the space below, sketch the curve C with equation $y = f(x + 2)$ and state the coordinates of the points where the curve C meets the x -axis.

(3)

- (b) Write down an equation of the curve C .

(1)

- (c) Use your answer to part (b) to find the coordinates of the point where the curve C meets the y -axis.

(2)

Leave
blank

Question 8 continued

Lined area for writing the answer to Question 8.



[illegible]

Leave
blank

Question 8 continued

Q8

(Total 6 marks)



P 4 1 8 0 2 A 0 1 7 2 8

Leave
blank

$$f'(x) = \frac{(3 - x^2)^2}{x^2}, \quad x \neq 0$$

where A and B are constants to be found.

(3)

(2)

(c) find $f(x)$.

(5)



Leave
blank

$$\begin{aligned} 2x + y &= 1 \\ x^2 - 4ky + 5k &= 0 \end{aligned}$$

(a) show that

$$x^2 + 8kx + k = 0 \quad (2)$$

(b) find the value of k . (3)

(c) For this value of k , find the solution of the simultaneous equations. (3)



Leave
blank

Question 10 continued

Lined area for writing the answer to Question 10.



This image shows a single sheet of white paper with horizontal ruling lines. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.

Q10

(Total 8 marks)



11.

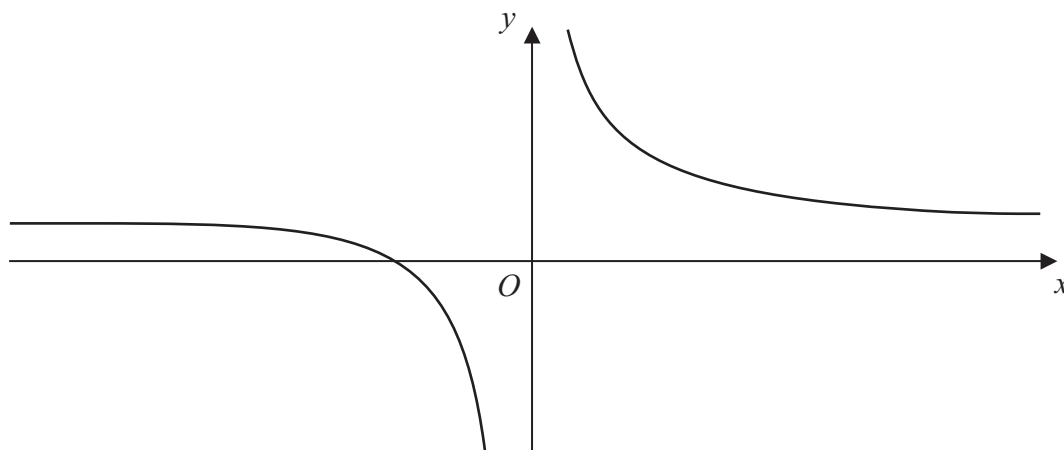


Figure 2

(a) Give the coordinates of the point where H crosses the x -axis.

(1)

(b) Give the equations of the asymptotes to H .

(2)

(c) Find an equation for the normal to H at the point $P(-3, 3)$.

(5)

This normal crosses the x -axis at A and the y -axis at B .

(d) Find the length of the line segment AB . Give your answer as a surd.

(3)



Leave
blank

Question 11 continued

Lined area for writing the answer to Question 11.



This image shows a single sheet of white paper with horizontal ruling lines. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.

Leave
blank

Question 11 continued

Lined area for writing the answer to Question 11.



Leave
blank

Question 11 continued

Q11

(Total 11 marks)

TOTAL FOR PAPER: 75 MARKS

END

