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

### 6663/01

# **Edexcel GCE**

# **Core Mathematics C1 Advanced Subsidiary**

Monday 24 May 2010 – Afternoon

Time: 1 hour 30 minutes



Exam	iner's us	e only
Team L	eader's u	ise only

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Question Number	Leave Blank	

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Materials required for examination Mathematical Formulae (Pink)

Items included with question papers

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 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.

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Turn over

Total



Write	$\sqrt{(75)}$ – $\sqrt{(27)}$	
in the form $k^{\gamma}$	$\sqrt{x}$ , where k and x are integers.	
		(2)
		(Total 2 marks)

$\int (8x^3 + 6x^{\frac{1}{4}} - 5)  dx$ giving each term in its simplest form. (4)	<b>2.</b> Find		Lo
giving each term in its simplest form.  (4)			
	$\int (8x^{3} + 6x^{2} - 5)  dx$		
	giving each term in its simplest form.		
		(4)	
			Q
(Total 4 marks)		(Total 4 marks)	



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(a) 3(x-2) < 8-2x

**(2)** 

(b) (2x-7)(1+x) < 0

**(3)** 

(c) both 3(x-2) < 8-2x and (2x-7)(1+x) < 0

**(1)** 

_					






Leave blank

(a) Show that $x^2 + 6x + 11$ can be written as	
$(x+p)^2+q$	
where $p$ and $q$ are integers to be found.	
	(2)
(b) In the space at the top of page 7, sketch the curve with equation $y = x^2$	$^{1} + 6x + 11$ ,
showing clearly any intersections with the coordinate axes.	(2)
(c) Find the value of the discriminant of $x^2 + 6x + 11$	
	(2)

Question 4 continued	Leave blank
	Q4
(Total 6 marks)	



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	$a_1 = \sqrt{(a_n^2 + 3)},$ $a_1 = 2$	$n\geqslant 1$ ,	
(a) Find $a_2$ and $a_3$ , leaving you	ır answers in su	rd form.	(2)
(b) Show that $a_5 = 4$			(2)

Leave blank

6.

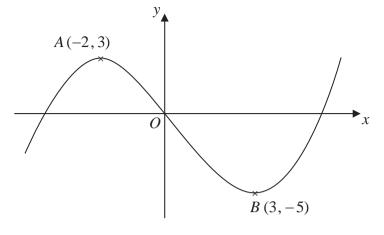


Figure 1

Figure 1 shows a sketch of the curve with equation y = f(x). The curve has a maximum point A at (-2, 3) and a minimum point B at (3, -5).

On separate diagrams sketch the curve with equation

(a) 
$$y = f(x+3)$$
 (3)

(b) 
$$y = 2f(x)$$
 (3)

On each diagram show clearly the coordinates of the maximum and minimum points.

The graph of y = f(x) + a has a minimum at (3, 0), where a is a constant.

(c) Write down the value of a.

**(1)** 

Question 6 continued	blank
	Q6
//P_4_1 # 1 .\	
(Total 7 marks)	

dv	$y = 8x^3 - 4\sqrt{x} + \frac{3x^2 + 2}{x},  x > 0$	
find $\frac{dy}{dx}$ .		(6)



8.	(a)	Find an equation of the line joining $A(7, 4)$ and $B(2, 0)$ , giving your answer in form $ax+by+c=0$ , where $a$ , $b$ and $c$ are integers.	the
			(3)
	(b)	Find the length of $AB$ , leaving your answer in surd form.	(2)
	The	point C has coordinates $(2, t)$ , where $t > 0$ , and $AC = AB$ .	
	(c)	Find the value of t.	(1)
	(d)	Find the area of triangle <i>ABC</i> .	(2)
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Question 8 continued	blank



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9.	A farmer has a pay scheme to keep fruit pickers working throughout the 30 day season. He pays £a for their first day, £ $(a+d)$ for their second day, £ $(a+2d)$ for their third day, and so on, thus increasing the daily payment by £d for each extra day they work.	Olalik
	A picker who works for all 30 days will earn £40.75 on the final day.	
	(a) Use this information to form an equation in a and d. (2)	
	A picker who works for all 30 days will earn a total of £1005	
	(b) Show that $15(a+40.75) = 1005$ (2)	
	(c) Hence find the value of $a$ and the value of $d$ . (4)	

Leave blank

- 10. (a) On the axes below sketch the graphs of
  - $(i) \quad y = x(4-x)$
  - (ii)  $y = x^2(7-x)$

showing clearly the coordinates of the points where the curves cross the coordinate axes.

**(5)** 

(b) Show that the x-coordinates of the points of intersection of

$$y = x(4-x)$$
 and  $y = x^2(7-x)$ 

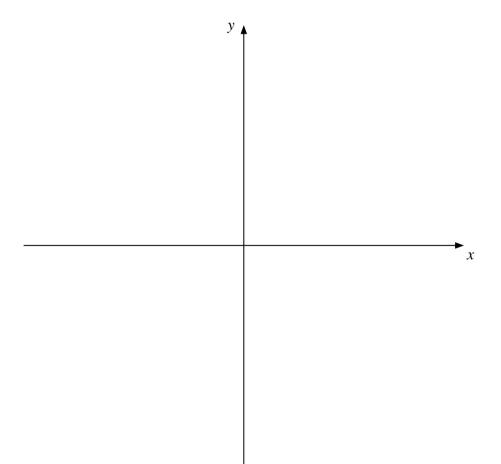
are given by the solutions to the equation  $x(x^2 - 8x + 4) = 0$ 

**(3)** 

The point A lies on both of the curves and the x and y coordinates of A are both positive.

(c) Find the exact coordinates of A, leaving your answer in the form  $(p+q\sqrt{3}, r+s\sqrt{3})$ , where p, q, r and s are integers.

**(7)** 



Question 10 continued	bla



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11. The curve C has equation y = f(x), x > 0, where

$$\frac{\mathrm{d}y}{\mathrm{d}x} = 3x - \frac{5}{\sqrt{x}} - 2$$

Given that the point P(4, 5) lies on C, find

(a) f(x),

**(5)** 

(b) an equation of the tangent to C at the point P, giving your answer in the form ax+by+c=0, where a, b and c are integers.

**(4)** 

26

Question 11 continued	blan
	Q11
(Total 9 man	rks)
TOTAL FOR PAPER: 75 MAI	
END	

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