

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**



**Wednesday 9 January 2008 – Afternoon
Time: 1 hour 30 minutes**

Examiner's use only		
Team Leader's use only		

Materials required for examination **Items included with question papers**
Mathematical Formulae (Green) Nil

Calculators may NOT be used in this examination.

Question Number	Leave Blank
1	
2	
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Total	

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 24 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.



Turn over

3. Simplify

$$\frac{5 - \sqrt{3}}{2 + \sqrt{3}}$$

giving your answer in the form $a + b\sqrt{3}$, where a and b are integers.

(4)

Q3

(Total 4 marks)



4. The point $A (-6, 4)$ and the point $B (8, -3)$ lie on the line L .
- (a) Find an equation for L in the form $ax + by + c = 0$, where a , b and c are integers. (4)
- (b) Find the distance AB , giving your answer in the form $k\sqrt{5}$, where k is an integer. (3)

(Total 7 marks)

Q4

5



6.

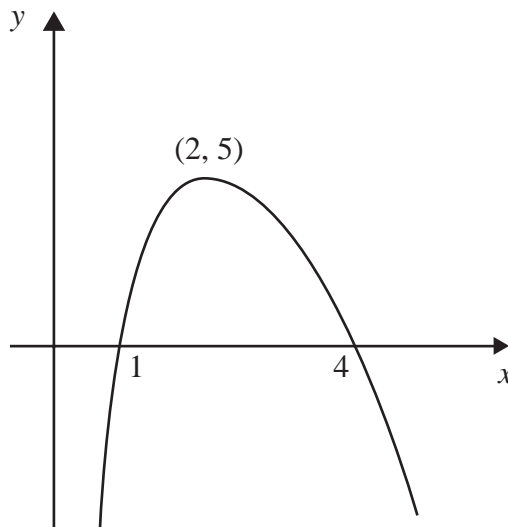


Figure 1

Figure 1 shows a sketch of the curve with equation $y = f(x)$. The curve crosses the x -axis at the points $(1, 0)$ and $(4, 0)$. The maximum point on the curve is $(2, 5)$.

In separate diagrams sketch the curves with the following equations.

On each diagram show clearly the coordinates of the maximum point and of each point at which the curve crosses the x -axis.

(a) $y = 2f(x)$, (3)

(b) $y = f(-x)$. (3)

The maximum point on the curve with equation $y = f(x + a)$ is on the y -axis.

(c) Write down the value of the constant a . (1)



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Question 6 continued

(Total 7 marks)

Q6



7. A sequence is given by:

$$x_1 = 1,$$
$$x_{n+1} = x_n(p + x_n),$$

where p is a constant ($p \neq 0$).

(a) Find x_2 in terms of p . (1)

(b) Show that $x_3 = 1 + 3p + 2p^2$. (2)

Given that $x_3 = 1$,

(c) find the value of p , (3)

(d) write down the value of x_{2008} . (2)



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Question 7 continued

Lined area for writing the answer to Question 7.

(Total 8 marks)

Q7



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8. The equation

$$x^2 + kx + 8 = k$$

has no real solutions for x .

(a) Show that k satisfies $k^2 + 4k - 32 < 0$. (3)

(b) Hence find the set of possible values of k . (4)



10. The curve C has equation

$$y = (x+3)(x-1)^2.$$

- (a) Sketch C showing clearly the coordinates of the points where the curve meets the coordinate axes. (4)

- (b) Show that the equation of C can be written in the form

$$y = x^3 + x^2 - 5x + k,$$

where k is a positive integer, and state the value of k . (2)

There are two points on C where the gradient of the tangent to C is equal to 3.

- (c) Find the x -coordinates of these two points. (6)



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11. The first term of an arithmetic sequence is 30 and the common difference is -1.5

(a) Find the value of the 25th term. (2)

The r th term of the sequence is 0.

(b) Find the value of r . (2)

The sum of the first n terms of the sequence is S_n .

(c) Find the largest positive value of S_n . (3)



