

**Edexcel GCE
Core Mathematics C2
Bronze Level B1
(Question paper)**

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Paper Reference(s)

6664/01

**Edexcel GCE
Core Mathematics C2
Bronze Level B1**

Time: 1 hour 30 minutes

Materials required for examination papers

Mathematical Formulae (Green)

Items included with question

Nil

Candidates may use any calculator allowed by the regulations of the Joint Council for Qualifications. Calculators must not have the facility for symbolic algebra manipulation, differentiation and integration, or have retrievable mathematical formulas stored in them.

Instructions to Candidates

Write the name of the examining body (Edexcel), your centre number, candidate number, the unit title (Core Mathematics C2), the paper reference (6664), your surname, initials and signature.

Information for Candidates

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

Full marks may be obtained for answers to ALL questions.

There are 11 questions in this question paper. The total mark for this paper is 75.

Advice to Candidates

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

You must show sufficient working to make your methods clear to the Examiner. Answers without working may gain no credit.

Suggested grade boundaries for this paper:

A*	A	B	C	D	E
74	68	62	56	50	44

1. A geometric series has first term $a = 360$ and common ratio $r = \frac{7}{8}$.

Giving your answers to 3 significant figures where appropriate, find

- (a) the 20th term of the series, (2)
- (b) the sum of the first 20 terms of the series, (2)
- (c) the sum to infinity of the series. (2)

January 2012

2. $f(x) = ax^3 + bx^2 - 4x - 3$, where a and b are constants.

Given that $(x - 1)$ is a factor of $f(x)$,

- (a) show that $a + b = 7$. (2)

Given also that, when $f(x)$ is divided by $(x + 2)$, the remainder is 9,

- (b) find the value of a and the value of b , showing each step in your working. (4)

January 2013

3. $y = \sqrt{10x - x^2}$.

(a) Copy and complete the table below, giving the values of y to 2 decimal places.

x	1	1.4	1.8	2.2	2.6	3
y	3	3.47			4.39	

(2)

(b) Use the trapezium rule, with all the values of y from your table, to find an approximation

for the value of $\int_1^3 \sqrt{10x - x^2} \, dx$.

(4)

January 2009

4.

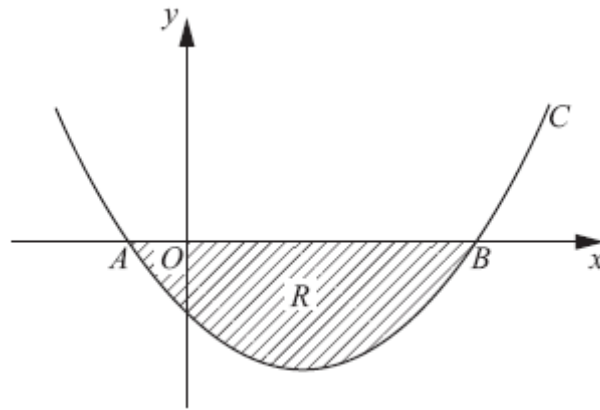


Figure 1

Figure 1 shows a sketch of part of the curve C with equation

$$y = (x + 1)(x - 5).$$

The curve crosses the x -axis at the points A and B .

(a) Write down the x -coordinates of A and B .

(1)

The finite region R , shown shaded in Figure 1, is bounded by C and the x -axis.

(b) Use integration to find the area of R .

(6)

January 2011

5.

$$f(x) = x^3 + ax^2 + bx + 3, \text{ where } a \text{ and } b \text{ are constants.}$$

Given that when $f(x)$ is divided by $(x + 2)$ the remainder is 7,

(a) show that $2a - b = 6$.

(2)

Given also that when $f(x)$ is divided by $(x - 1)$ the remainder is 4,

(b) find the value of a and the value of b .

(4)

January 2012

6.

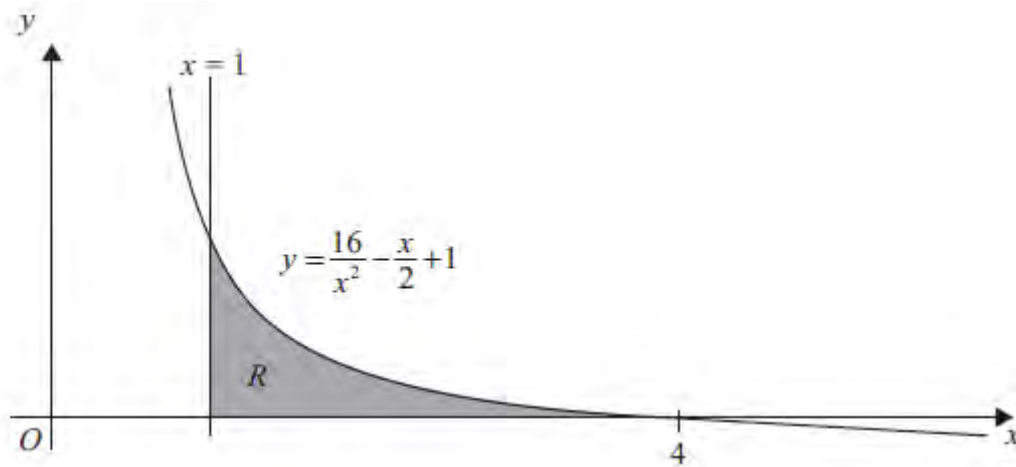


Figure 2

Figure 2 shows the graph of the curve with equation

$$y = \frac{16}{x^2} - \frac{x}{2} + 1, \quad x > 0.$$

The finite region R , bounded by the lines $x = 1$, the x -axis and the curve, is shown shaded in Figure 2. The curve crosses the x -axis at the point $(4, 0)$.

(a) Complete the table with the values of y corresponding to $x = 2$ and 2.5 .

x	1	1.5	2	2.5	3	3.5	4
y	16.5	7.361			1.278	0.556	0

(2)

(b) Use the trapezium rule with all the values in the completed table to find an approximate value for the area of R , giving your answer to 2 decimal places.

(4)

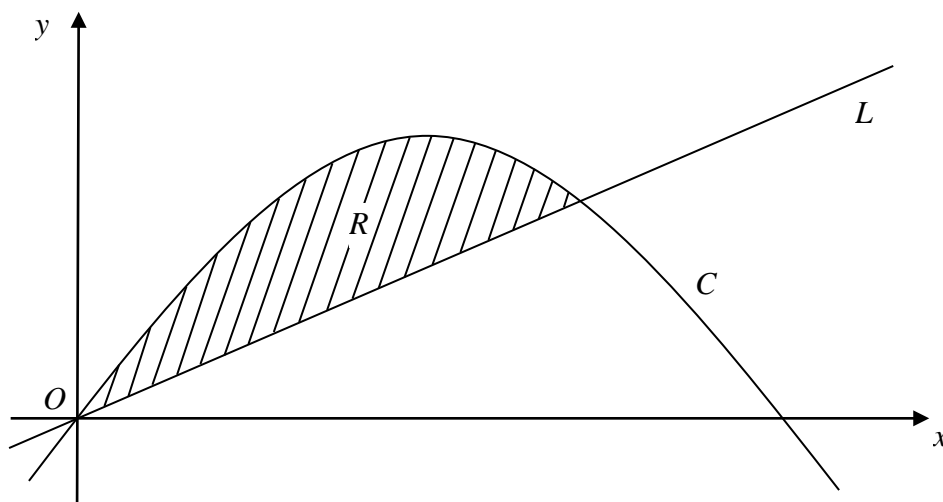
(c) Use integration to find the exact value for the area of R .

(5)

January 2012

7.

Figure 3



In Figure 3 the curve C has equation $y = 6x - x^2$ and the line L has equation $y = 2x$.

(a) Show that the curve C intersects with the x -axis at $x = 0$ and $x = 6$. (1)

(b) Show that the line L intersects the curve C at the points $(0, 0)$ and $(4, 8)$. (3)

The region R , bounded by the curve C and the line L , is shown shaded in Figure 3.

(c) Use calculus to find the area of R . (6)

January 2008

8.

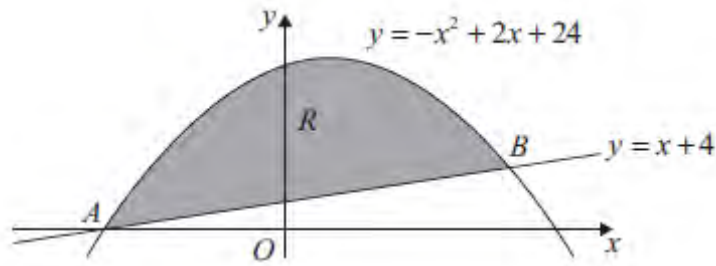


Figure 4

The straight line with equation $y = x + 4$ cuts the curve with equation $y = -x^2 + 2x + 24$ at the points A and B , as shown in Figure 4.

(a) Use algebra to find the coordinates of the points A and B .

(4)

The finite region R is bounded by the straight line and the curve and is shown shaded in Figure 4.

(b) Use calculus to find the exact area of R .

(7)

January 2010

9.

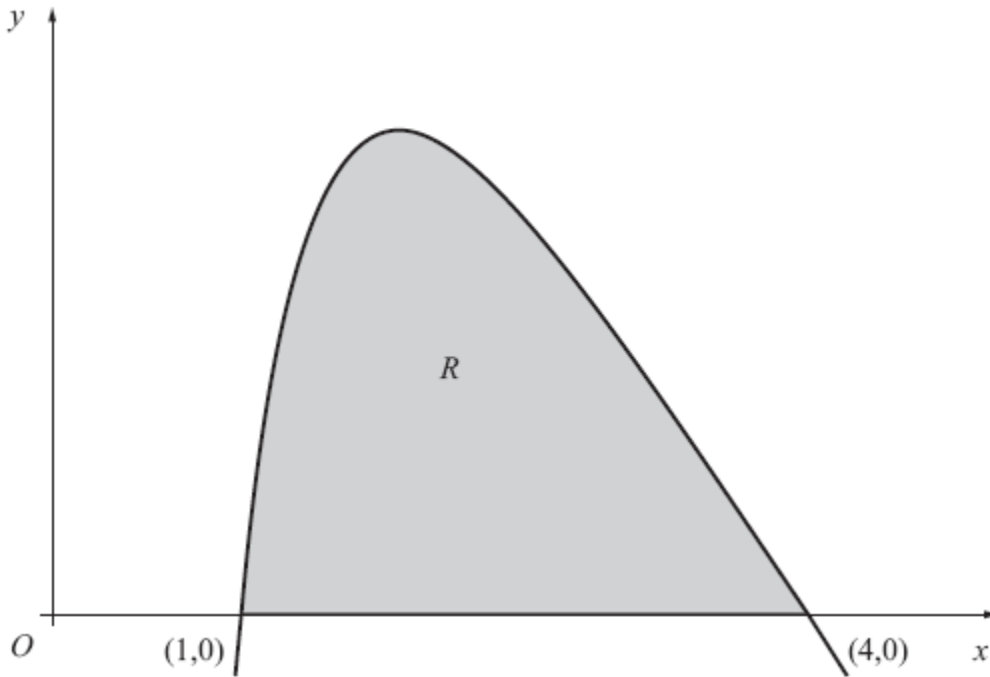


Figure 5

The finite region R , as shown in Figure 5, is bounded by the x -axis and the curve with equation

$$y = 27 - 2x - 9\sqrt{x} - \frac{16}{x^2}, \quad x > 0.$$

The curve crosses the x -axis at the points $(1, 0)$ and $(4, 0)$.

(a) Copy and complete the table below, by giving your values of y to 3 decimal places.

x	1	1.5	2	2.5	3	3.5	4
y	0	5.866		5.210		1.856	0

(2)

(b) Use the trapezium rule with all the values in the completed table to find an approximate value for the area of R , giving your answer to 2 decimal places.

(4)

(c) Use integration to find the exact value for the area of R .

(6)

January 2013

TOTAL FOR PAPER: 75 MARKS

END