



(4)

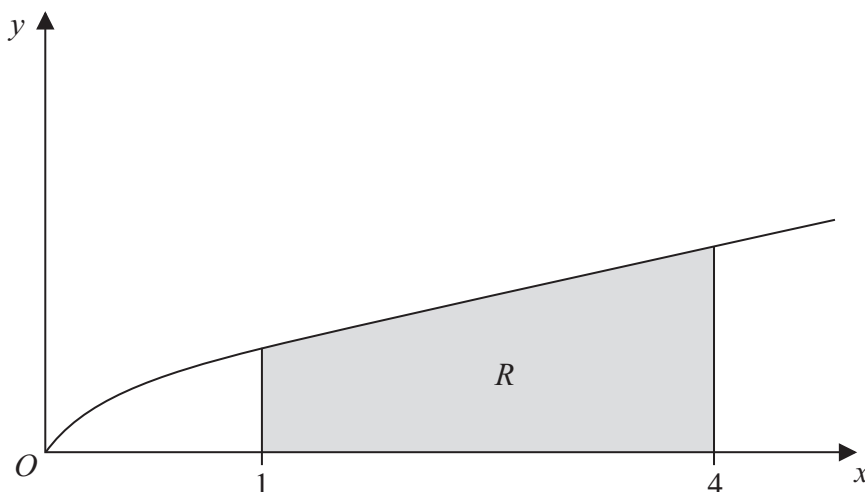


Figure 1

(a) Complete the table with the value of y corresponding to $x = 3$, giving your answer to 4 decimal places.

(1)

x	1	2	3	4
y	0.5	0.8284		1.3333

(b) Use the trapezium rule, with all the values of y in the completed table, to obtain an estimate of the area of the region R , giving your answer to 3 decimal places.

(3)

(c) Use the substitution $u = 1 + \sqrt{x}$, to find, by integrating, the exact area of R .

(8)

[illegible]

5.

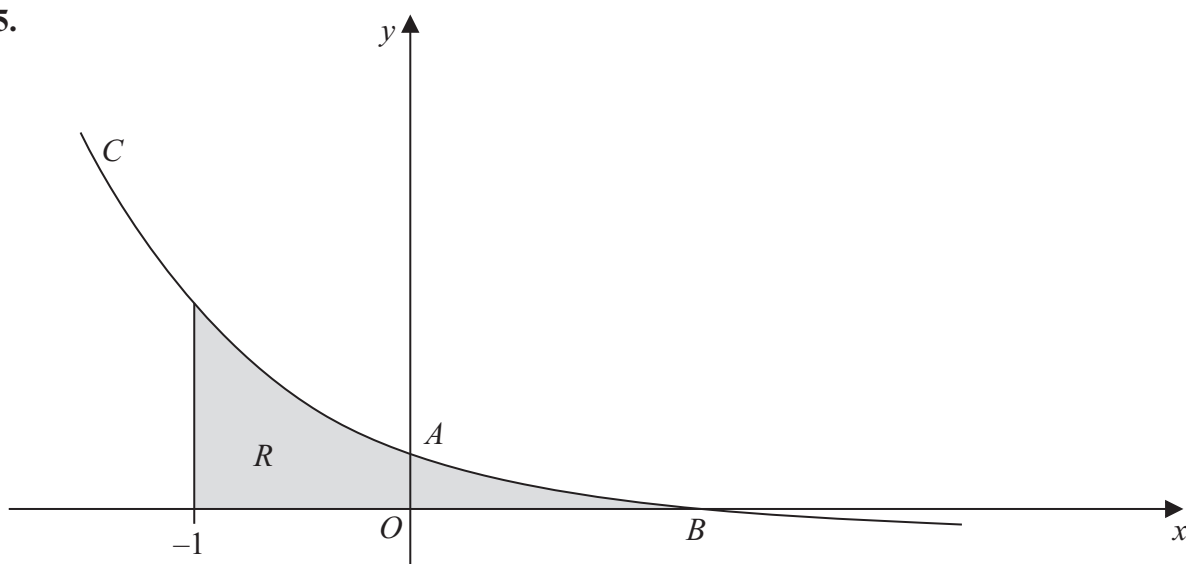


Figure 2

Figure 2 shows a sketch of part of the curve C with parametric equations

$$x = 1 - \frac{1}{2}t, \quad y = 2^t - 1$$

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

(a) Show that A has coordinates $(0, 3)$. (2)

(b) Find the x coordinate of the point B . (2)

(c) Find an equation of the normal to C at the point A . (5)

The region R , as shown shaded in Figure 2, is bounded by the curve C , the line $x = -1$ and the x -axis.

(d) Use integration to find the exact area of R . (6)





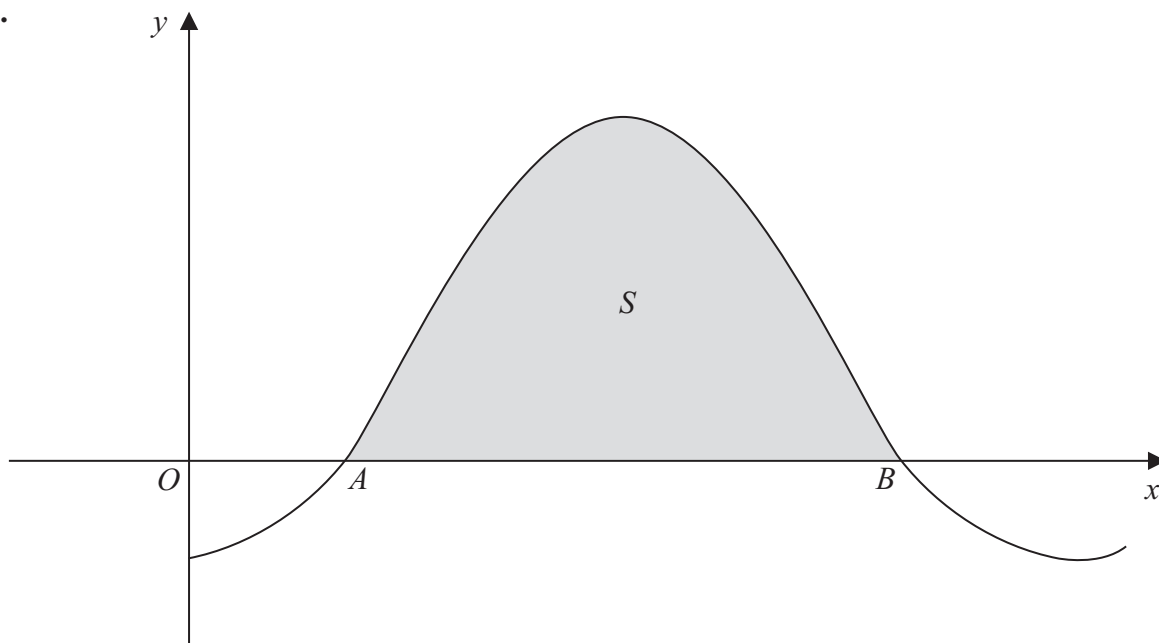


Figure 3 shows a sketch of part of the curve with equation $y = 1 - 2\cos x$, where x is measured in radians. The curve crosses the x -axis at the point A and at the point B .

- The finite region S enclosed by the curve and the x -axis is shown shaded in Figure 3. The region S is rotated through 2π radians about the x -axis.









Question 8 continued

(Total 9 marks)

Q8

TOTAL FOR PAPER: 75 MARKS

END

