







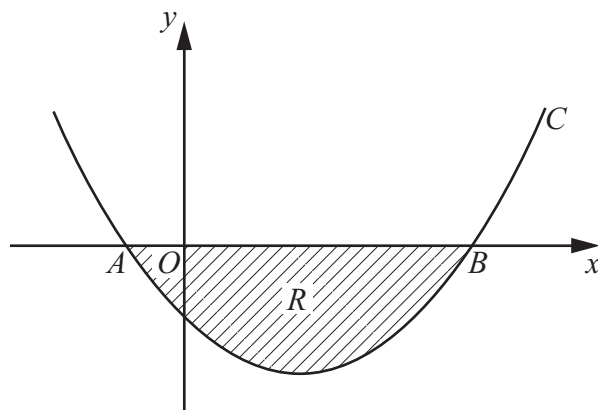








4.



**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)**

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**Question 5 continued**

Lined writing area consisting of multiple horizontal lines.

**(Total 4 marks)**

**Q5**

Small rectangular box for marking.



6. 
$$y = \frac{5}{3x^2 - 2}$$

(a) Complete the table below, giving the values of  $y$  to 2 decimal places.

$x$	2	2.25	2.5	2.75	3
$y$	0.5	0.38			0.2

(2)

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

approximate value for  $\int_2^3 \frac{5}{3x^2 - 2} dx$ .

(4)

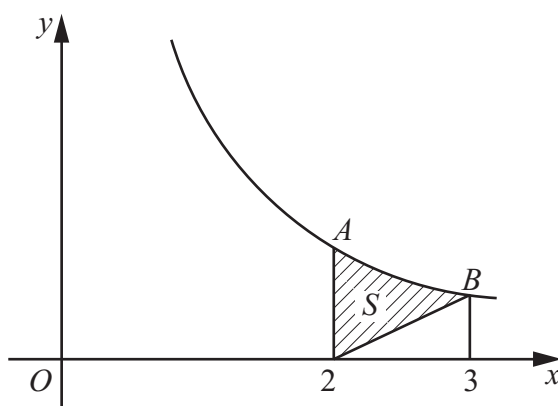


Figure 2

Figure 2 shows a sketch of part of the curve with equation  $y = \frac{5}{3x^2 - 2}$ ,  $x > 1$ .

At the points  $A$  and  $B$  on the curve,  $x = 2$  and  $x = 3$  respectively.

The region  $S$  is bounded by the curve, the straight line through  $B$  and  $(2, 0)$ , and the line through  $A$  parallel to the  $y$ -axis. The region  $S$  is shown shaded in Figure 2.

(c) Use your answer to part (b) to find an approximate value for the area of  $S$ .

(3)

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7. (a) Show that the equation

$$3\sin^2 x + 7\sin x = \cos^2 x - 4$$

can be written in the form

$$4\sin^2 x + 7\sin x + 3 = 0$$
 **(2)**

(b) Hence solve, for  $0 \leq x < 360^\circ$ ,

$$3\sin^2 x + 7\sin x = \cos^2 x - 4$$

giving your answers to 1 decimal place where appropriate. **(5)**

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8. (a) Sketch the graph of  $y = 7^x$ ,  $x \in \mathbb{R}$ , showing the coordinates of any points at which the graph crosses the axes.

**(2)**

- (b) Solve the equation

$$7^{2x} - 4(7^x) + 3 = 0$$

giving your answers to 2 decimal places where appropriate.

**(6)**







**Question 8 continued**

Lined area for writing the answer to Question 8.

Q8

**(Total 8 marks)**

















**Question 10 continued**

Lined area for writing the answer to Question 10.

**Q10**

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**(Total 10 marks)**

**TOTAL FOR PAPER: 75 MARKS**

**END**

