

$$\int (8x^3 + 4) \, dx$$

giving each term in its simplest form.

(3)

(Total 3 marks)



2. (a) Write down the value of $32^{\frac{1}{5}}$

(1)

(b) Simplify fully $(32x^5)^{-\frac{2}{5}}$

(3)

Q2

(Total 4 marks)





4.

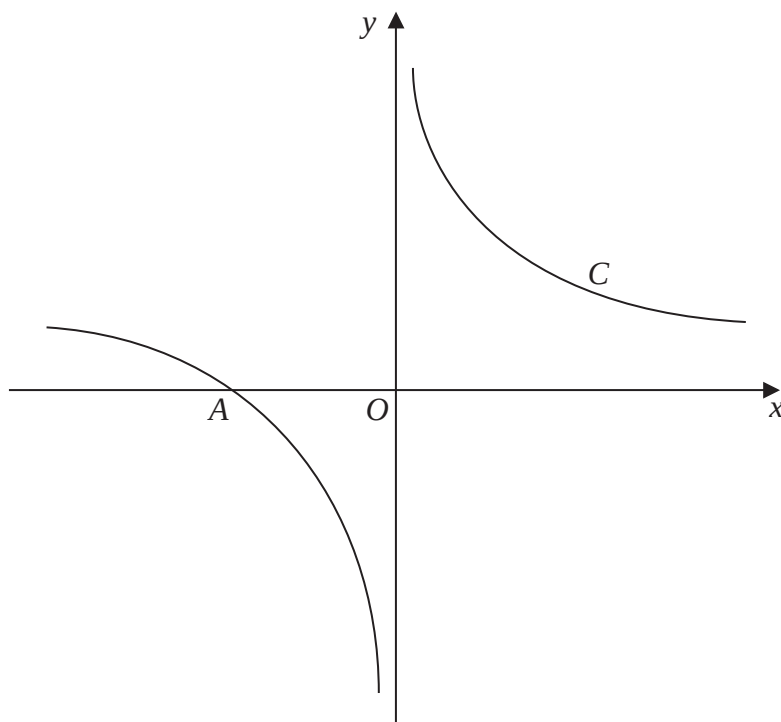


Figure 1

Figure 1 shows a sketch of the curve C with equation

$$y = \frac{1}{x} + 1, \quad x \neq 0$$

The curve C crosses the x -axis at the point A .

- (a) State the x coordinate of the point A .

(1)

The curve D has equation $y = x^2(x - 2)$, for all real values of x .

- (b) A copy of Figure 1 is shown on page 7.

On this copy, sketch a graph of curve D .

Show on the sketch the coordinates of each point where the curve D crosses the coordinate axes.

(3)

- (c) Using your sketch, state, giving a reason, the number of real solutions to the equation

$$x^2(x - 2) = \frac{1}{x} + 1$$

(1)



Question 4 continued

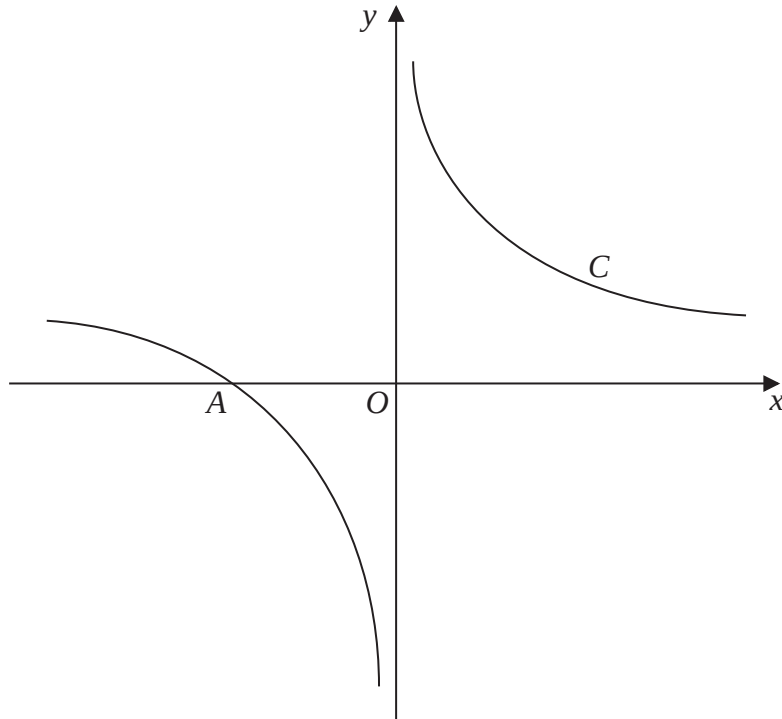


Figure 1

Q4

(Total 5 marks)





7. Differentiate with respect to x , giving each answer in its simplest form.

$$(a) \quad (1 - 2x)^2 \tag{3}$$

$$(b) \quad \frac{x^5 + 6\sqrt{x}}{2x^2} \quad (4)$$



(2)

(3)

(c) In a particular year, the selling price of each computer in £s was equal to three times the number of computers the shop sold in that year. By forming and solving an equation, find the year in which this occurred.

(4)

This image shows a full page of white paper with horizontal blue or grey ruling lines. The lines are evenly spaced and run across the width of the page, leaving small margins at the top and bottom. There are no vertical margin lines, text, or other markings on the page.



9.

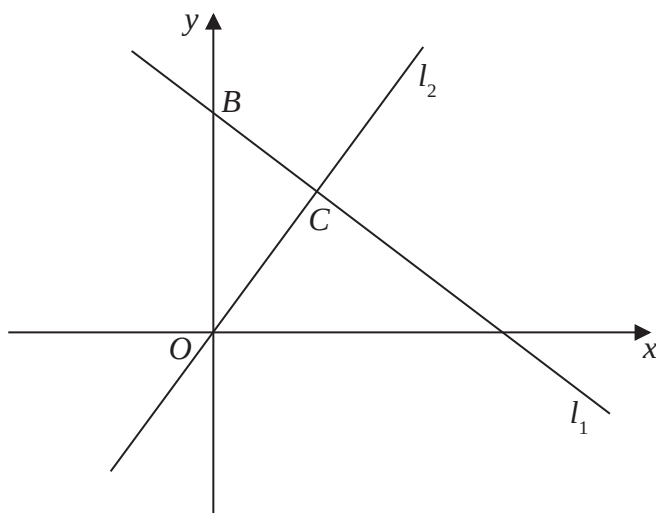


Figure 2

The line l_1 , shown in Figure 2 has equation $2x + 3y = 26$

The line l_2 passes through the origin O and is perpendicular to l_1

- (a) Find an equation for the line l_2

(4)

The line l_2 intersects the line l_1 at the point C .

Line l_1 crosses the y -axis at the point B as shown in Figure 2.

- (b) Find the area of triangle OBC .

Give your answer in the form $\frac{a}{b}$, where a and b are integers to be determined.

(6)

[illegible]







