8

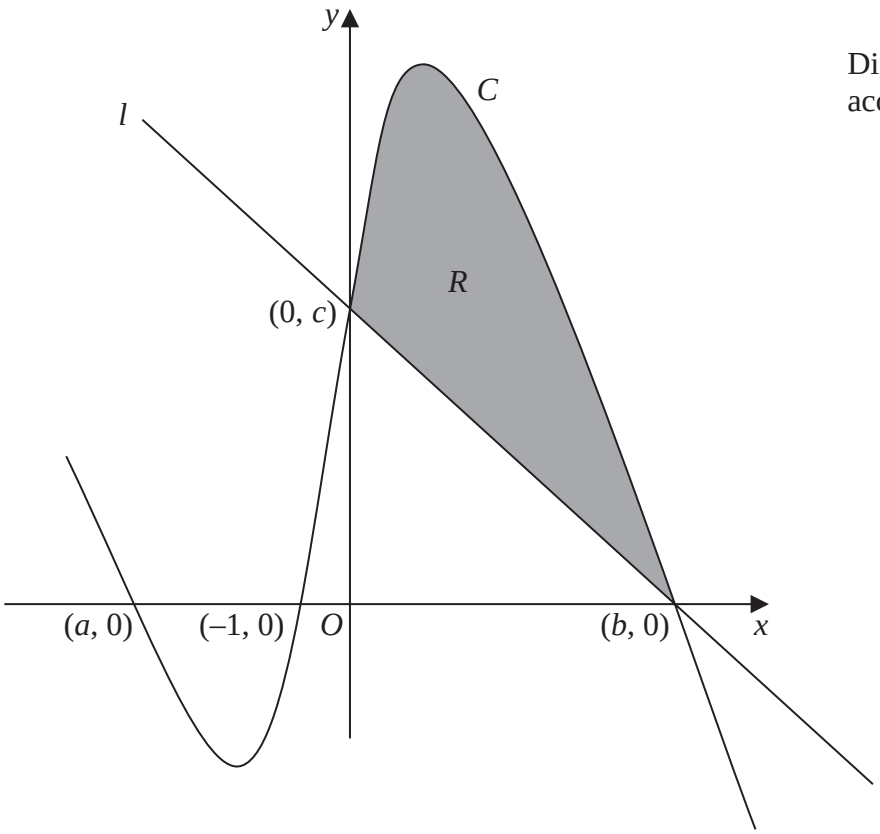

Diagram **NOT** accurately drawn

Figure 1

Figure 1 shows part of the curve C with equation $y = f(x)$

The curve C passes through the points with coordinates

$$(a, 0), (-1, 0), (b, 0) \text{ and } (0, c)$$

Given that $f'(x) = 17 + 2x - 3x^2$

(a) show that the equation of C is $y = 15 + 17x + x^2 - x^3$

(4)

(b) Find the value of a, the value of b and the value of c

(6)

The straight line l intersects C at the points with coordinates $(b, 0)$ and $(0, c)$

The region R, shown shaded in Figure 1, is bounded by l and C

(c) Use algebraic integration to find the exact area of region R

(5)

Question 8 continued

Question 8 continued

Question 8 continued

(Total for Question 8 is 15 marks)