9

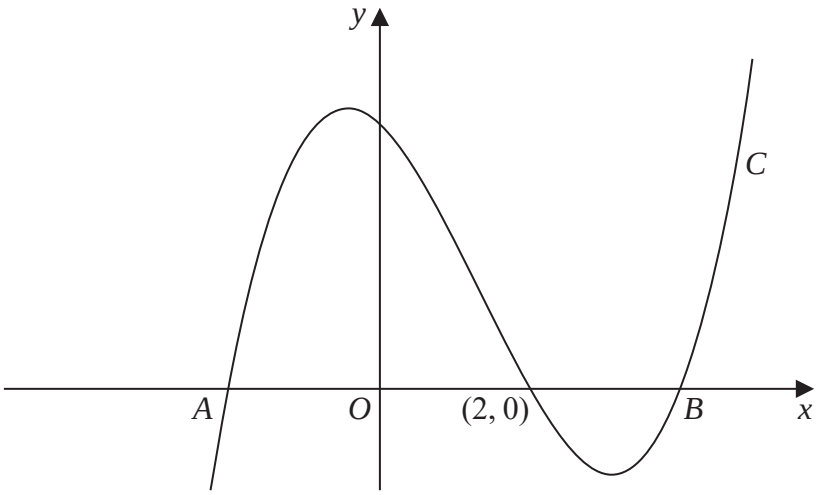

Diagram **NOT** accurately drawn

Figure 1

The curve C with equation $y = x^3 - 4x^2 - 4x + 16$ crosses the x-axis at the point with coordinates (2, 0) and at the points A and B, as shown in Figure 1. The coordinates of the points A and B are $(a, 0)$ and $(b, 0)$ respectively.

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

(4)

The point D lies on C and has x coordinate 0

The line l is the tangent to C at the point D.

(b) Find an equation of l.

(5)

(c) Show that l passes through B.

(1)

(d) Use algebraic integration to find the area of the finite region bounded by l and C.

(5)

Question 9 continued

Question 9 continued

Question 9 continued

(Total for Question 9 is 15 marks)