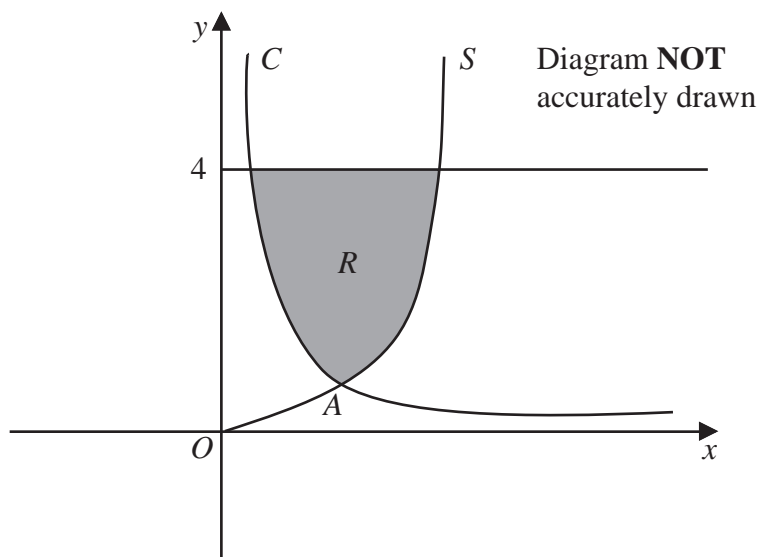**6**

Figure 3

Figure 3 shows part of the curve C with equation $y = \dfrac{1}{4x}$, $x > 0$ and part of the curve S with equation $y = 2x^2$, $x \geqslant 0$

The curve C and the curve S intersect at the point A

(a) Find the coordinates of point A

(3)

The finite region R, shown shaded in Figure 3, bounded by the curve C, the curve S and the straight line $y = 4$ is rotated through 360º about the y-axis.

(b) Find, using algebraic integration, the exact volume of the solid formed.

(7)

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Question 6 continued

(Total for Question 6 is 10 marks)