

FOR EDEXCEL

GCE Examinations
Advanced Subsidiary

Core Mathematics C4

Paper B

Time: 1 hour 30 minutes

Instructions and Information

Candidates may use any calculator EXCEPT those with the facility for symbolic algebra, differentiation and/or integration.

Full marks may be obtained for answers to ALL questions.

Mathematical formulae and statistical tables are available.

This paper has eight questions.

Advice to Candidates

You must show sufficient working to make your methods clear to an examiner.
Answers without working may gain no credit.



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5.

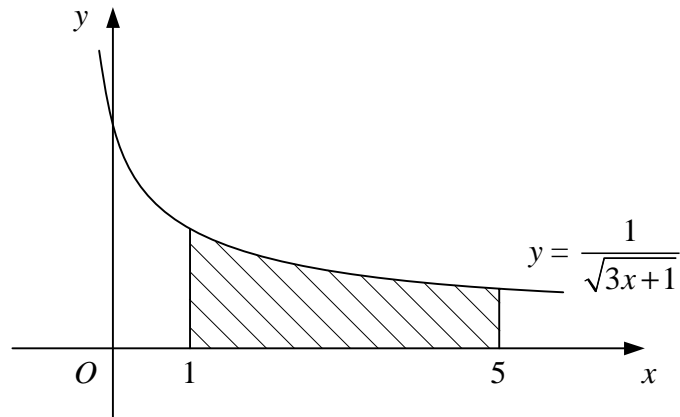
**Figure 1**

Figure 1 shows the curve with equation $y = \frac{1}{\sqrt{3x+1}}$.

The shaded region is bounded by the curve, the x -axis and the lines $x = 1$ and $x = 5$.

(a) Find the area of the shaded region. (4)

The shaded region is rotated completely about the x -axis.

(b) Find the volume of the solid formed, giving your answer in the form $k\pi \ln 2$, where k is a simplified fraction. (5)

7.

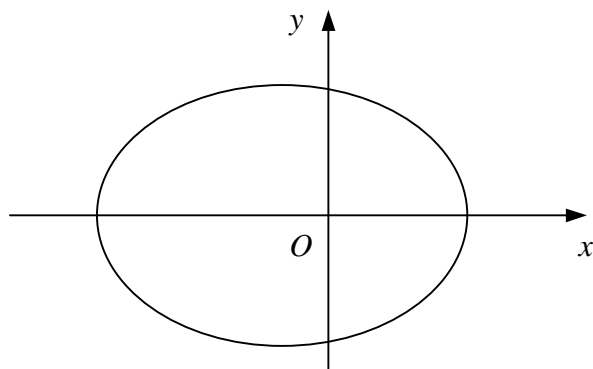
**Figure 2**

Figure 2 shows the curve with parametric equations

$$x = -1 + 4 \cos \theta, \quad y = 2\sqrt{2} \sin \theta, \quad 0 \leq \theta < 2\pi.$$

The point P on the curve has coordinates $(1, \sqrt{6})$.

- (a) Find the value of θ at P . (2)
- (b) Show that the normal to the curve at P passes through the origin. (7)
- (c) Find a cartesian equation for the curve. (3)
