

GCE Examinations  
Advanced Subsidiary

## Core Mathematics C4

Paper 1

Time: 1 hour 30 minutes

### *Instructions and Information*

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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 seven questions.

### *Advice to Candidates*

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



*Written by Shaun Armstrong*

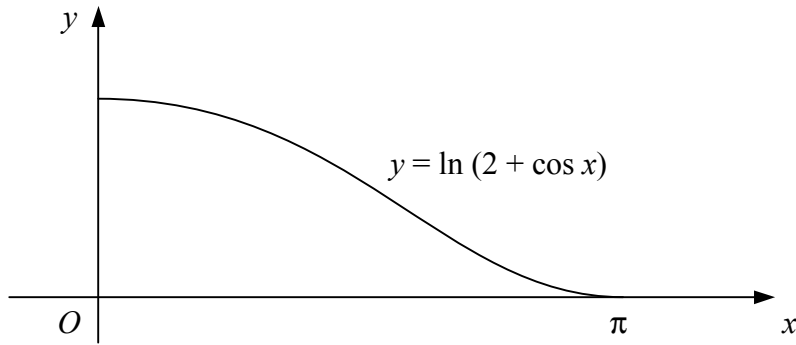
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3.



**Figure 1**

Figure 1 shows the curve with equation  $y = \ln(2 + \cos x)$ ,  $0 \leq x \leq \pi$ .

- (a) Complete the table below for points on the curve, giving the  $y$  values to 4 decimal places. (2)
  
- (b) Giving your answers to 3 decimal places, find estimates for the area of the region bounded by the curve and the coordinate axes using the trapezium rule with
  - (i) 1 strip,
  - (ii) 2 strips,
  - (iii) 4 strips. (6)
  
- (c) Making your reasoning clear, suggest a value to 2 decimal places for the actual area of the region bounded by the curve and the coordinate axes. (2)

$x$	0	$\frac{\pi}{4}$	$\frac{\pi}{2}$	$\frac{3\pi}{4}$	$\pi$
$y$	1.0986				0

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