1.15 Pure: Integration Depth: 10-minute Pack

EDEXCEL 9MA0 · Calculator allowed · about 10 minutes

Total Marks

Name: _____ Date: ____ / ____ / _____

Answer ALL questions. Show all your working.

1 The curve C has equation $y = 2x^2 - x$ and the line l has equation $y = 5x$. The curve and the line meet at the points A and B.

(a) Find the coordinates of A and B. **(3)**

(b) Find the area of the finite region bounded by the curve and the line. **(4)**

(Total for Question 1 is 7 marks)

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2 Using the substitution $u = 3 + x^2$, find the integral of $x\sqrt{3+x^2}\,dx$.

(Total for Question 2 is 2 marks)

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Question 1

(a) equates the expressions for y and rearranges to a quadratic	**M1**
(a) x = 0 and x = 3	**A1**
(a) (0, 0) and (3, 15)	**A1**
(a) Answer: A(0, 0), B(3, 15)	
(b) area = integral of (line - curve) or of (curve - line) between the x values	**M1**
(b) integrand $2x^2 - 6x$	**A1**
(b) integrates and substitutes the limits	**M1**
(b) 9	**A1**
(b) Answer: 9	

Question 2

substitutes $u = 3+x^2$, $du = 2x\,dx$, to get integral of $(1/2)\sqrt{u}\,du$	**M1**
$= (1/3)(3+x^2)^{3/2} + c$ cao	**A1**
Answer: $(1/3)(3+x^2)^{3/2} + c$	

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