Edexcel Maths C1

Topic Questions from Papers

Integration

7. (a) Show that $\frac{(3-\sqrt{x})^2}{\sqrt{x}}$ can be written as $9x^{-\frac{1}{2}} - 6 + x^{\frac{1}{2}}$.

(2)

Given that $\frac{dy}{dx} = \frac{(3 - \sqrt{x})^2}{\sqrt{x}}$, x > 0, and that $y = \frac{2}{3}$ at x = 1,

(b) find y in terms of x.

(6)

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The curve with equation y = f(x) passes through the point (1, 6). Given that **8.**

$$f'(x) = 3 + \frac{5x^2 + 2}{x^{\frac{1}{2}}}, x > 0,$$

find $f(x)$ and simplify your answer.	

Find $\int (6x^2 + 2 + x^{-\frac{1}{2}}) dx$, giving each term in its simplest form.	(4)
	(4)
	(Total 4 marks)

9. The curve C with equation y = f(x) passes through the point (5, 65).

Given that $f'(x) = 6x^2 - 10x - 12$,

(a) use integration to find f(x).

(4)

(b) Hence show that f(x) = x(2x+3)(x-4).

(2)

(c) In the space provided on page 17, sketch C, showing the coordinates of the points where C crosses the x-axis.

(3)

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Question 9 continued		blank
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		Q9
(Total 9 marks)		

Find $\int (3x^2 + 4x^5 - 7) dx$.	(4)

(10tal 3 marks

11. The gradient of a curve C is given by $\frac{dy}{dx} = \frac{(x^2 + 3)^2}{x^2}$, $x \ne 0$.

(a) Show that $\frac{dy}{dx} = x^2 + 6 + 9x^{-2}$.

(2)

The point (3, 20) lies on C.

(b) Find an equation for the curve C in the form y = f(x).

(6)

	Q
(Total 8 marks)	

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Find $\int (12x^5 - 8x^3 + 3) dx$, giving each term in its simplest form.	

Given that			
	$f'(x) = 3x^2 - 3$	$3x^{\frac{1}{2}}-7$,	
ise integration to find	f(r) giving each to	erm in its simplest form.	
use integration to find	i(x), giving each to	om in its simplest form.	(5)

4.	$\frac{\mathrm{d}y}{\mathrm{d}x} = 5x^{-\frac{1}{2}} + x\sqrt{x}, \qquad x > 0$	
	Given that $y = 35$ at $x = 4$, find y in terms of x, giving each term in its simplest form.	(7)

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	$\int (8x^3 + 6x^{\frac{1}{2}} - 5) \mathrm{d}x$	
giving each term in	n its simplest form.	(1)
		(4)



$\int (12x^5 - 3x^2 + 4x^{\frac{1}{3}}) \mathrm{d}x$	
giving each term in its simplest form.	
	(5)

7.	The curve with equation $y = f(x)$ passes through the point $(-1,0)$.
	Given that
	$f'(x) = 12x^2 - 8x + 1$
	find $f(x)$.
	(5)

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- **6.** Given that $\frac{6x+3x^{\frac{5}{2}}}{\sqrt{x}}$ can be written in the form $6x^p + 3x^q$,
 - (a) write down the value of p and the value of q.

(2)

Given that $\frac{dy}{dx} = \frac{6x + 3x^{\frac{5}{2}}}{\sqrt{x}}$, and that y = 90 when x = 4,

(b) find y in terms of x, simplifying the coefficient of each term.

(5)

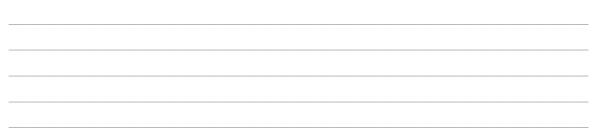
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1.	Given that	$y = x^4 + 6x^{-2}$, find in t	heir sim	plest form
		-	1		T

(a)	dy
(a)	dx

(3)

	٠
(b)	$\int y dx$

(3)





$f'(x) = 3x^2 - 3x + 5$		
find the value of $f(1)$.	(5)	

giving each term in its simplest form.	
	(4)

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	$\frac{\mathrm{d}y}{\mathrm{d}x} = -x^3 + \frac{4x - 5}{2x^3} , \qquad x \neq 0$	
Given that $y = 7$ at $x = $	= 1, find y in terms of x, giving each term in its simplest for	m. (6)

L	eave	
hl	ank	

Find	$\int \left(3x^2 - \frac{4}{x^2}\right) \mathrm{d}x$	
giving each term in its simplest	form.	(4)
		(4)

10. A curve has equation y = f(x). The point P with coordinates (9, 0) lies on the curve.

Given that

$$f'(x) = \frac{x+9}{\sqrt{x}}, \qquad x > 0$$

(a) find f(x).

(6)

(b)	Find the <i>x</i> -coordinates	of the two	points o	n y = f(x)	where	the gra	dient o	of the	curve	is
	equal to 10									

(4)

2.	Find
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$\int \left(10x^4 - 4x - 4x\right)$	$-\frac{3}{\sqrt{x}}$ dx
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giving each term in its simplest form.		
	(4)	

Core Mathematics C1

Mensuration

Surface area of sphere = $4\pi r^2$

Area of curved surface of cone = $\pi r \times \text{slant height}$

Arithmetic series

$$u_n = a + (n-1)d$$

$$S_n = \frac{1}{2}n(a+l) = \frac{1}{2}n[2a+(n-1)d]$$