Edexcel Maths C1

Topic Questions from Papers

Integration

Leave blank

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)

Leave blank

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

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

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

(7)

Leave blank

1. Find $\int \left(6x^2 + 2 + x^{-\frac{1}{2}}\right) \mathrm{d}x$, giving each term in its simplest form.

(4)

Q1

(Total 4 marks)

Leave blank

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)

Leave blank

Question 9 continued

Q9

(Total 9 marks)

Leave blank

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

(4)

Q1

(Total 4 marks)

Leave blank

1. Find $\int (2 + 5x^2)\,dx$.

(3)

Q1

(Total 3 marks)

Leave blank

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

(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)

Leave blank

Question 11 continued

Q11

(Total 8 marks)

TOTAL FOR PAPER: 75 MARKS

END

Leave blank

2. Find $\int \left(12x^5 - 8x^3 + 3\right) \mathrm{d}x$, giving each term in its simplest form.

(4)

Q2

(Total 4 marks)

Leave blank

4. A curve has equation $y = f(x)$ and passes through the point (4, 22).

Given that

$$f'(x) = 3x^2 - 3x^{\frac{1}{2}} - 7,$$

use integration to find $f(x)$, giving each term in its simplest form.

(5)

Leave blank

4. $\dfrac{dy}{dx} = 5x^{-\frac{1}{2}} + x\sqrt{x}, \qquad x > 0$

Given that $y = 35$ at $x = 4$, find y in terms of x, giving each term in its simplest form.

(7)

Leave blank

2. Find

$$\int (8x^3 + 6x^{\frac{1}{2}} - 5)\,dx$$

giving each term in its simplest form.

(4)

Q2

(Total 4 marks)

Leave blank

2. Find

$$\int (12x^5 - 3x^2 + 4x^{\frac{1}{3}})\, dx$$

giving each term in its simplest form.

(5)

Q2

(Total 5 marks)

Leave blank

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)

Leave blank

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)

Leave blank

1. Given that $y = x^4 + 6x^{\frac{1}{2}}$, find in their simplest form

(a) $\dfrac{\mathrm{d}y}{\mathrm{d}x}$

(3)

(b) $\int y \, \mathrm{d}x$

(3)

Leave blank

7. A curve with equation $y = \mathrm{f}(x)$ passes through the point (2, 10). Given that

$$\mathrm{f}'(x) = 3x^2 - 3x + 5$$

find the value of $\mathrm{f}(1)$.

(5)

Leave blank

1. Find

$$\int \left(6x^2 + \frac{2}{x^2} + 5\right) \mathrm{d}x$$

giving each term in its simplest form.

(4)

Q1

(Total 4 marks)

Leave blank

8. $$\frac{dy}{dx} = -x^3 + \frac{4x - 5}{2x^3}, \qquad x \neq 0$$

Given that $y = 7$ at $x = 1$, find y in terms of x, giving each term in its simplest form.

(6)

Leave blank

3. Find

$$\int \left(3x^2 - \frac{4}{x^2}\right) \mathrm{d}x$$

giving each term in its simplest form.

(4)

Leave blank

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 x-coordinates of the two points on $y = f(x)$ where the gradient of the curve is equal to 10

(4)

Leave blank

2. Find

$$\int \left(10x^4 - 4x - \frac{3}{\sqrt{x}}\right) \mathrm{d}x$$

giving each term in its simplest form.

(4)

Q2

(Total 4 marks)

Core Mathematics C1

Mensuration

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

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

Arithmetic series

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

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