



Integration

Questions

Suitable for:

Pearson Edexcel International A-Level (iAL) — Pure Mathematics 1



Question 1

Find

$$\int (5x^4 - 3x^2 + 6x - 2) \, dx$$

(4 marks)

Total for question = 4 marks



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Question 2

Find each of the following integrals, giving each term in simplest form.

(a)

$$\int \left(4x^3 + \frac{3}{x^2} - 2\sqrt{x} \right) dx$$

(4 marks)

(b)

$$\int \left(5x^{\frac{3}{2}} - \frac{4}{x^3} + 6 \right) dx$$

(4 marks)

Total for question = 8 marks





Question 3

The curve with equation $y = f(x)$ passes through the point (2, 11).

Given that

$$f'(x) = 6x^2 - 4x + 3$$

find $f(x)$.

(5 marks)

Total for question = 5 marks



Question 4

Find

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

giving your answer in its simplest form.

(5 marks)

Total for question = 5 marks



Question 5

Find

$$\int (x + 3)^2(x - 1) \, dx$$

giving your answer in its simplest form.

(5 marks)

Total for question = 5 marks



Question 6

Find

$$\int \frac{2x^{\frac{5}{2}} + 3x^{\frac{3}{2}}}{\sqrt{x}} dx$$

giving each term in its simplest form.

(4 marks)

Total for question = 4 marks





Question 7

A curve has gradient function

$$\frac{dy}{dx} = 3\sqrt{x} + \frac{4}{x^2} - 2$$

The curve passes through the point (4, 20).

Find the equation of the curve.

(6 marks)

Total for question = 6 marks



Question 8

Find

$$\int (3x^2 - 1)^2 dx$$

giving your answer in its simplest form.

(4 marks)

Total for question = 4 marks