A Level Maths

Topic: Indefinite and Definite Integration

Instructions

Answer all questions. Show all necessary working. Give exact answers unless otherwise stated.

Practice Problems

1. Find $\int (3x^2 - 2x + 5)\,dx$
2. Evaluate $\int_1^4 (2x + 3)\,dx$
3. Find $\int \left(\frac{1}{x} + \frac{4}{x^2}\right)\,dx$
4. Evaluate $\int_0^{\pi} \sin x\,dx$
5. Find the area under the curve $y = x^2$ between $x = 1$ and $x = 3$
6. Determine $\int (5e^x - 3e^{-x})\,dx$
7. Find $\int (\cos x + 2\sin x)\,dx$
8. Given $f'(x) = 6x - 4$, and $f(1) = 2$, find $f(x)$

Multiple-Choice Questions

1. $\int_0^2 x^2\,dx =$

   A. 4

   B. $\frac{8}{3}$

   C. $\frac{6}{5}$

   D. $\frac{2}{3}$

2. $\int \ln x\,dx =$

   A. $x \ln x$

   B. $x \ln x - x + C$

   C. $\frac{1}{x} + C$

   D. $x \ln x + x + C$

3. The integral $\int \sec^2 x\,dx =$

   A. $\tan x + C$

   B. $\sec x + C$

   C. $\cot x + C$

   D. $-\tan x + C$

4. If $\int_1^3 f(x)\,dx = 8$, then $\int_3^1 f(x)\,dx =$

   A. 8

   B. 0

   C. -8

   D. Cannot be determined

5. $\int (4x^3 - 2x)\,dx =$

   A. $x^4 - x^2 + C$

   B. $x^4 + x^2 + C$

   C. $4x^4 - x^2 + C$

   D. $x^3 - x + C$