INTEGRATION

B

Notation

$\int$

Elongated S

A

Defination

The reverse process of differentiation

Skill

1. Integrated function respect to x
2. Function when the gradient function given
3. Area between curve & the axes
4. Volume of revolutions

Types

Indefinite Integration

$$\int f(x)\,dx = \int y\,dx$$

Defenite Integration

$$\int_a^b f(x)\,dx = F(b) - F(a)$$

C

Rules

1

$\int a\,dx = ax + c$

$\int 3\,dx = 3x + c$

$\int \frac{2}{3}\,dx, = \frac{2}{3}x + c$

2

$\int x^n\,dx = x^{n+1} + c$

$\int x^4 dx = \frac{x^5}{5} + c$

$\int x^{-4}\,dx = \frac{x^{-3}}{-3} + c = -\frac{1}{3x^3} + c$

3

$\int ax^n\,dx = \frac{ax^{n+1}}{n+1} + c$

$= \int -8x^2\,dx$

$= -\frac{8x^3}{3} + c$

4

$\int (ax+b)^n\,dx = \int \frac{(ax+b)^{n+1}}{a(n+1)} + c$

$\int (3x-7)^5\,dx = \frac{(3x-7)^6}{(3)(6)} + c$

5

$$A = \int_a^b f(x)dx = \int_a^b f(y)dy$$

6

$$V = \pi\int_a^b x^2 dx = \pi\int_a^b y^2 dy$$