

Table of indefinite integrals.

1. $\int a \, dx = ax + C$, a is a constant

2. $\int x^n \, dx = \frac{x^{n+1}}{n+1} + C$, $n \neq -1$

3. $\int \frac{dx}{x} = \ln|x| + C$

4. $\int e^x \, dx = e^x + C$

Properties of indefinite integrals.

For k a constant,

1. $\int kf(x) \, dx = k \int f(x) \, dx$

2. $\int (f(x) \pm g(x)) \, dx = \int f(x) \, dx \pm \int g(x) \, dx$

Reversing the chain rule.

$$\int f'(g(x))g'(x) \, dx = f(g(x)) + C$$

General indefinite integral formulas.

1. $\int [f(x)]^n f'(x) \, dx = \frac{[f(x)]^{n+1}}{n+1} + C$, $n \neq -1$.

2. $\int e^{f(x)} f'(x) \, dx = e^{f(x)} + C$

3. $\int \frac{1}{f(x)} f'(x) \, dx = \ln|f(x)| + C$.

Properties of the definite integral

1. $\int_a^a f(x) \, dx = 0$

2. $\int_a^b f(x) \, dx = -\int_b^a f(x) \, dx$

3. $\int_a^b c \, dx = c(b-a)$, where c is a constant

4. $\int_a^b cf(x) \, dx = c \int_a^b f(x) \, dx$, where c is a constant

5. $\int_a^b [f(x) \pm g(x)] \, dx = \int_a^b f(x) \, dx \pm \int_a^b g(x) \, dx$

6. $\int_a^b f(x) \, dx = \int_a^c f(x) \, dx + \int_c^b f(x) \, dx$, where $a < c < b$