Rules of Integration

(i) $\frac{d}{dx}\{\int f(x)dx\} = f(x)$

(ii) $\int k \cdot f(x)dx = k\int f(x)dx$

(iii) $\int \{f_1(x) \pm f_2(x) \pm f_3(x) \pm \ldots \pm f_n(x)\}dx$

$= \int f_1(x)\,dx \pm \int f_2(x)\,dx \pm \int f_3(x)\,dx \pm \ldots \pm \int f_n(x)\,dx$

(iv) $\int f'\{g(x)\} \cdot g'(x)dx = f\{g(x)\} + C$

Method of Substitution

(i) $\frac{d}{dx}\{\int f(x)dx\} = f(x)$

(ii) $\int k \cdot f(x)dx = k\int f(x)dx$

(iii) $\int \{f_1(x) \pm f_2(x) \pm f_3(x) \pm \ldots \pm f_n(x)\}dx$

$= \int f_1(x)\,dx \pm \int f_2(x)\,dx \pm \int f_3(x)\,dx \pm \ldots \pm \int f_n(x)\,dx$

(iv) $\int f'\{g(x)\} \cdot g'(x)dx = f\{g(x)\} + C$

Here, all the constant cannot be calculated by using the method in Case I. However, B_l, B_2, B_3, … , B_n can be found using the same method i.e., shortcut can be applied only in the case of non-repeated linear factor.

Integration of Irrational Algebraic Function

Irrational function of the form of $(ax + b)^{1/n}$ and x can be evaluated by substitution $(ax + b) = t^n$, thus