

Properties of Definite Integral

Provided f is defined $x = a$,

$$\int_a^a f(x) dx = 0 \qquad \int_4^4 x^2 dx = 0$$

upper limit
upper limit
lower limit
lower limit

Properties of Definite Integral

Provided f is integrable $[a, b]$,

$$\int_a^b f(x) dx = - \int_b^a f(x) dx \qquad \int_0^4 x^2 dx = - \int_4^0 x^2 dx$$

upper limit
upper limit
lower limit
lower limit

Properties of Definite Integral

Provided f is integrable $[a,b]$ and $c \in [a,b]$,

$$\int_a^b f(x) \, dx = \int_a^c f(x) \, dx + \int_c^b f(x) \, dx \qquad \int_0^4 x^2 \, dx = \int_0^2 x^2 \, dx + \int_2^4 x^2 \, dx$$

Properties of Definite Integral

Provided f is integrable $[a,b]$ and k is a constant,

$$\int_a^b k \cdot f(x) \, dx = k \cdot \int_a^b f(x) \, dx \qquad \int_0^4 2x^2 \, dx = 2 \int_0^4 x^2 \, dx$$

Properties of Definite Integral

Provided f and g are integrable $[a, b]$,

$$\int_a^b [f(x) \pm g(x)] dx = \int_a^b f(x) dx \pm \int_a^b g(x) dx \qquad \int_0^4 (x^2 + x) dx = \int_0^4 x^2 dx + \int_0^4 x dx$$