Properties of Definite Integrals

① $\int_a^b k \cdot f(x)\,dx = k \cdot \int_a^b f(x)\,dx$, where k is a constant

② $\int_a^b f(x) \pm g(x)\,dx = \int_a^b f(x)\,dx \pm \int_a^b g(x)\,dx$, sum and difference of areas

③ $\int_a^b f(x)\,dx = -\int_b^a f(x)\,dx$] $\Delta x = (a-b)/n$

④ $\int_a^a f(x)\,dx = 0$

⑤ $\int_a^c f(x)\,dx = \int_a^b f(x)\,dx + \int_b^c f(x)\,dx$ → see interpretation and definitions

⑥ $\int_a^b f(x)\,dx = -\int_b^a f(x)\,dx$, when $a < b$ and $(a-b)/n \to -1$

⑦ $\int_a^a f(x)\,dx = 0$, $\Delta x = 0$