$$\int_a^b f(x) = T(h) - \frac{(b-a)h^2}{12} f''(\xi)$$

$$T(h) = h\left(\frac{1}{2}f(x_0) + f(x_1) + \cdots + f(x_{n-1}) + \frac{1}{2}f(x_n)\right)$$

$$x_i = a + ih$$

$f(x) = 1 \longrightarrow \int_a^b 1\,dx = T(h) - \frac{(b-a)h^2}{12} f''(\xi)$

$b - a = hn$

$$b - a = T(h) - \underbrace{\frac{(b-a)h^2}{12} f''(\xi)}_{0,\ f''=0}$$

$$b - a = T(h)$$

$$hn = h\left(\frac{1}{2} + \cdots + 1 + \frac{1}{2}\right)$$

$$hn = hn$$