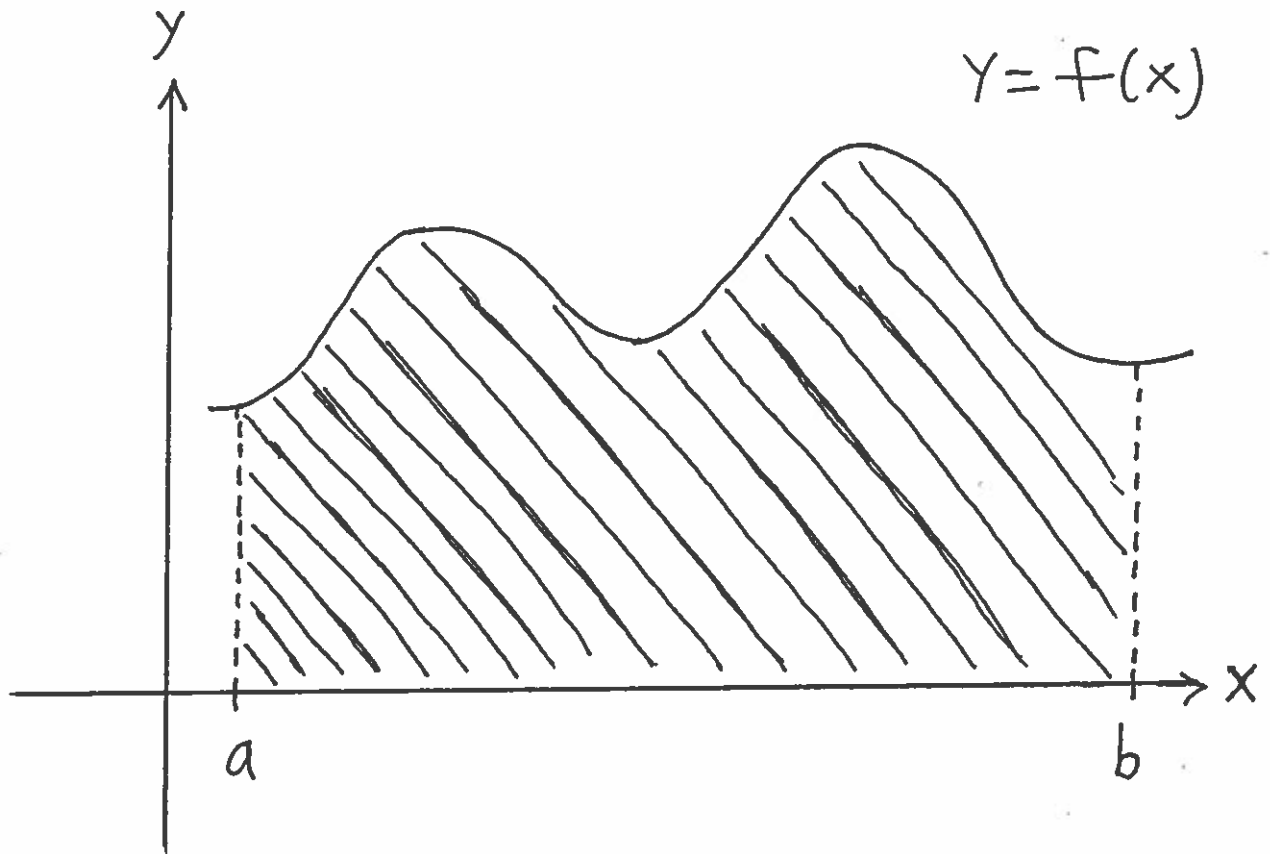
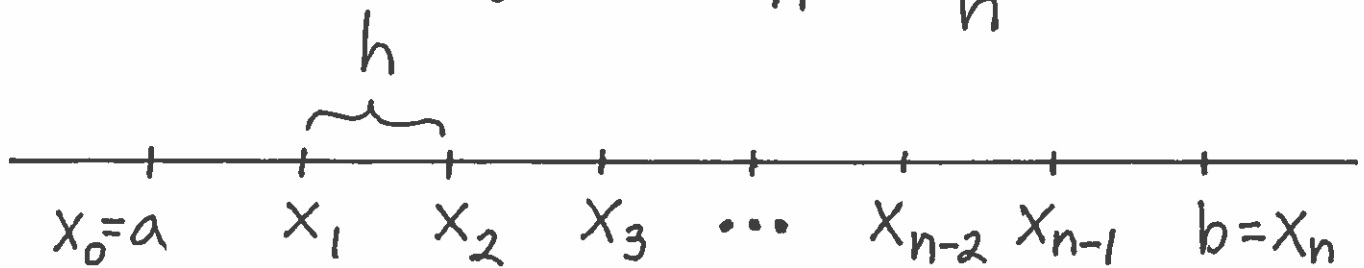


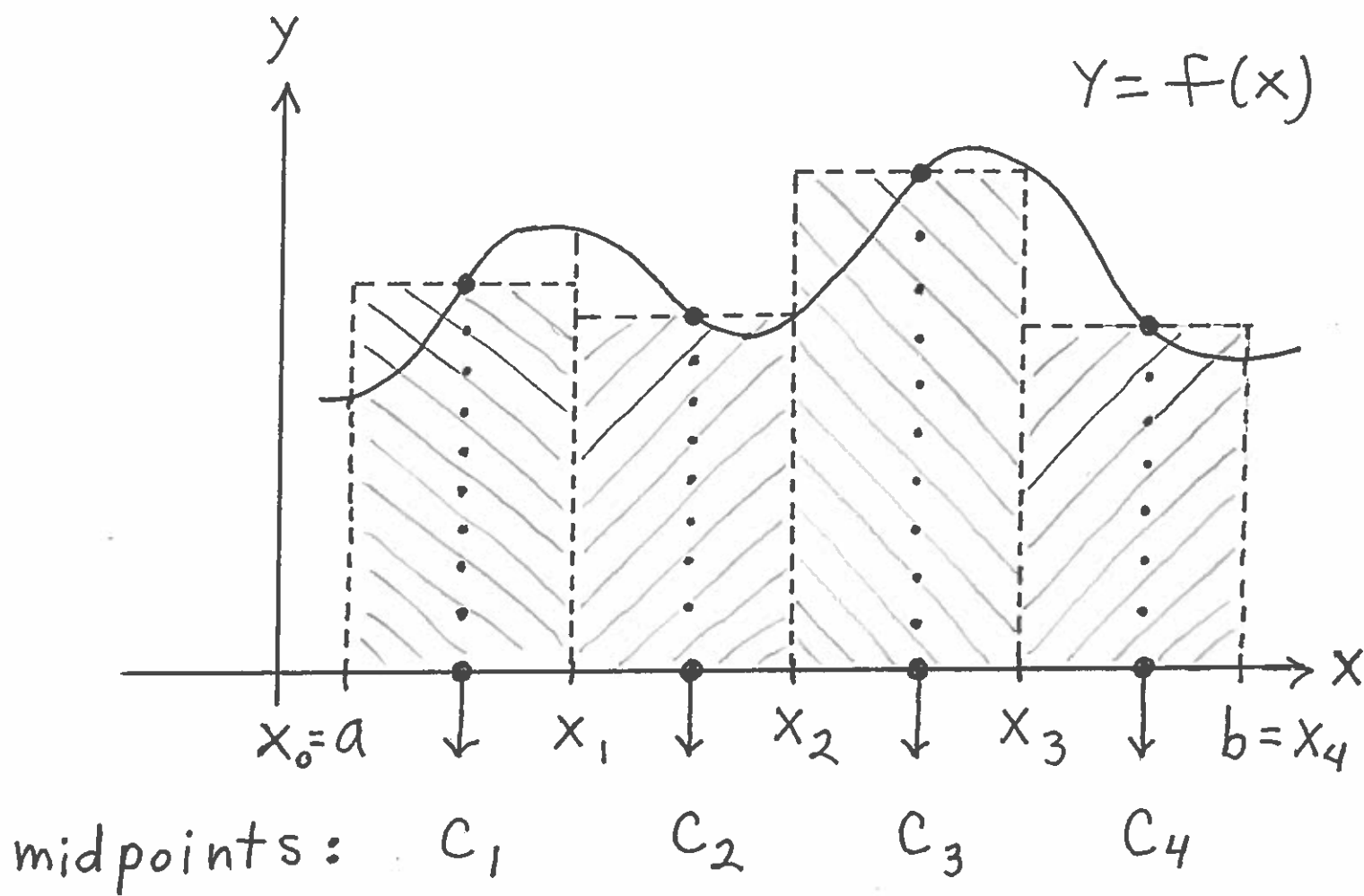
Estimating the Value of $\int_a^b f(x) dx$



First divide the interval $[a, b]$ into n equal parts each of length $h = \frac{b-a}{n}$:



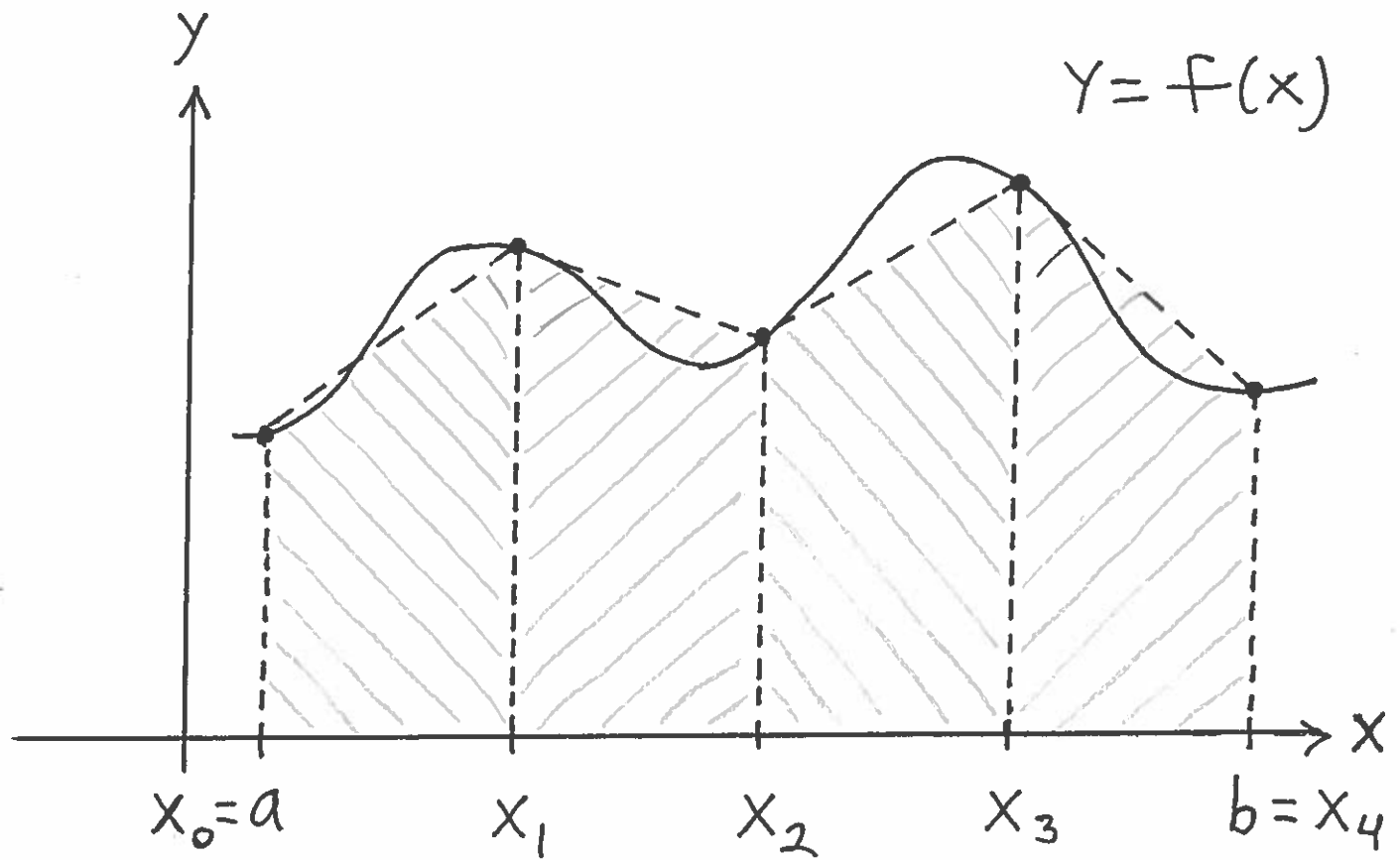
Midpoint Rule with $n=4$:



$$\int_a^b f(x) dx \approx M_4$$

$$= h [f(c_1) + f(c_2) + f(c_3) + f(c_4)]$$

Trapezoidal Rule with $n=4$:



$$\int_a^b f(x) dx \approx T_4$$

$$= \frac{h}{2} [f(x_0) + 2f(x_1) + 2f(x_2) + 2f(x_3) + f(x_4)]$$