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$$\int_a^b f(x) dx = S(x)$$

$$f(x) = x^3$$

$$\begin{aligned} \int_0^{2h} x^3 dx &= h \left(\frac{1}{3} f(x_0) + \frac{4}{3} f(x_1) + \frac{1}{3} f(x_2) \right) \\ \left. \frac{1}{4} x^4 \right|_0^{2h} &= h \left(0 + \frac{4}{3} h^3 + \frac{1}{3} (2h)^3 \right) \\ \frac{1}{4} (2h)^4 &= h \left(\frac{4}{3} h^3 + \frac{8}{3} h^3 \right) \\ 4h^4 &= 4h^4 \end{aligned}$$