

# Integrazione Numerica

$$\int_a^b f(x) dx \quad f: [a, b] \rightarrow \mathbb{R}$$

$$\approx h \sum_{i=0}^{n-1} f(x_i) \quad \text{Newton-Cotes}$$

$$n=1 \quad \int_a^b f(x) dx \approx \left( \frac{f(a) + f(b)}{2} \right) (b-a)$$

formula dei trapezi

$$x_i = a + \left( \frac{b-a}{n} \right) i \quad i=0 \dots n$$

$$\int_a^b f(x) dx = \sum_{i=0}^{n-1} \int_{x_i}^{x_{i+1}} f(x) dx$$

$$\approx \sum_{i=0}^{n-1} \left( \frac{f(x_i) + f(x_{i+1})}{2} \right) h \quad h = \frac{b-a}{n}$$

Formula dei trapezi, composta o Newton