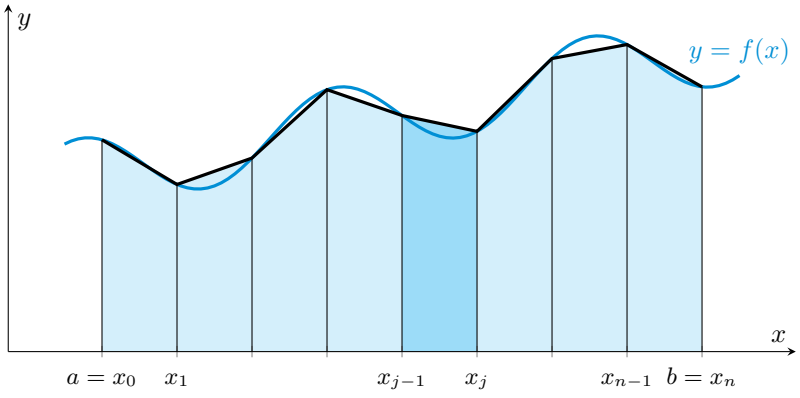
Numerical Integration

May 24, 2021

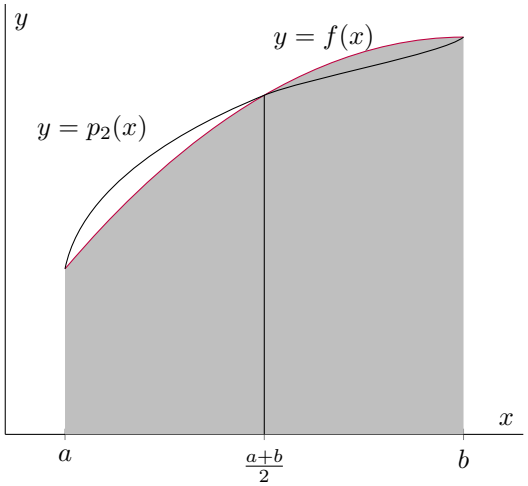
Trapeziod method



$h = \frac{b-a}{N-1}$
N - number of points
Total area (integral)

$$\int_a^b f(x)dx \approx h \sum_{k=1}^{N} \frac{f(x_{k-1}) + f(x_k)}{2}$$

Simpson's method



$h = \frac{b-a}{2}$

$$\int_a^b f(x)dx \approx \frac{h}{3} \sum_{k=1}^{N/2} \{f(x_{2k-2}) + 4f(x_{2k-1}) + f(x_{2k}))\}$$