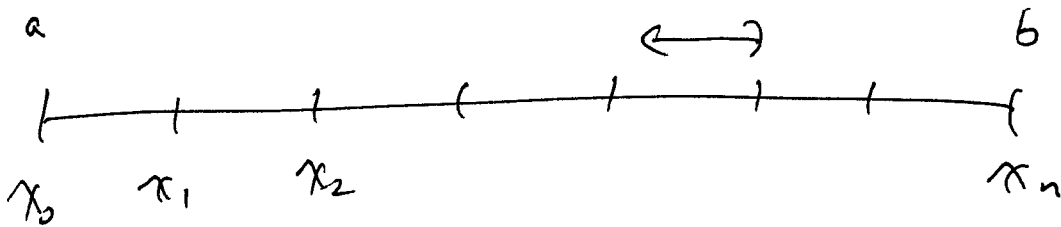


§ 7.5 Numerical Integration

$\int_a^b f(x) dx$ is a number

How do you compute it numerically?

Left, right sums



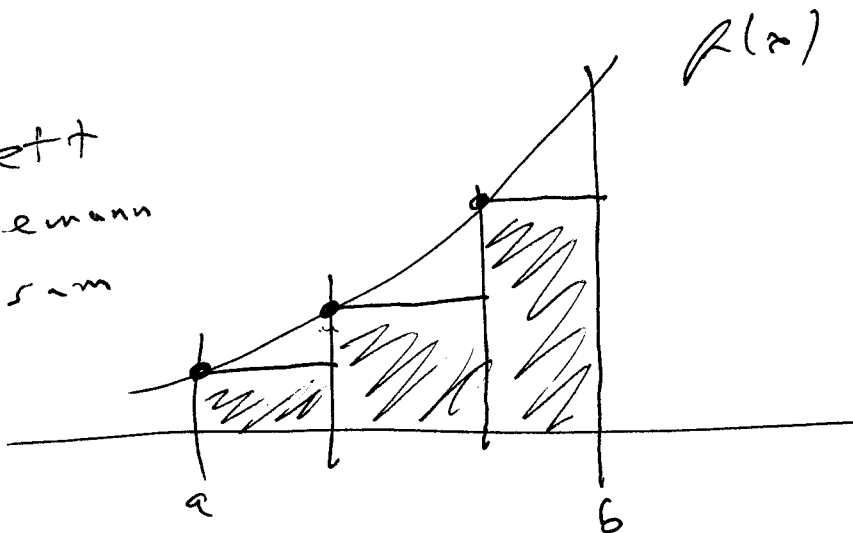
$$x_0 = a$$

$$x_n = b$$

equally spaced

$$\Delta x = \frac{b-a}{n} = \text{spacing}$$

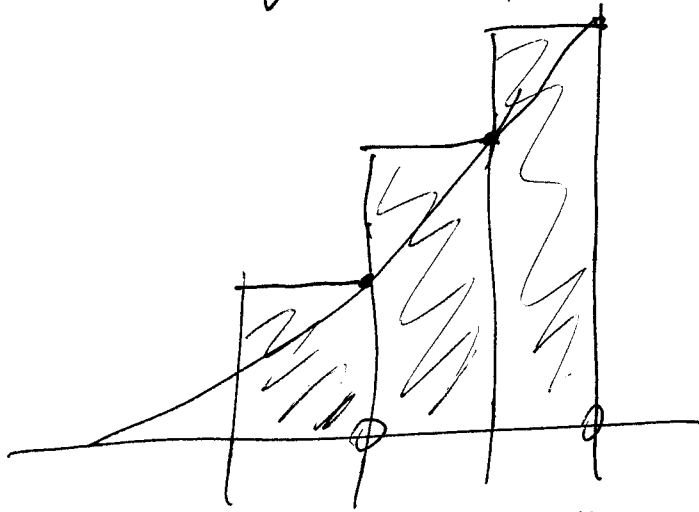
left
Riemann
sum



$n=3$

$$LEFT(n) = \sum_{i=1}^n f(x_{i-1}) \Delta x$$

$$= f(x_0) \Delta x + f(x_1) \Delta x + f(x_2) \Delta x \\ + \dots + f(x_{n-1}) \Delta x$$



$$RIGHT(n) = \sum_{i=1}^n f(x_i) \Delta x$$