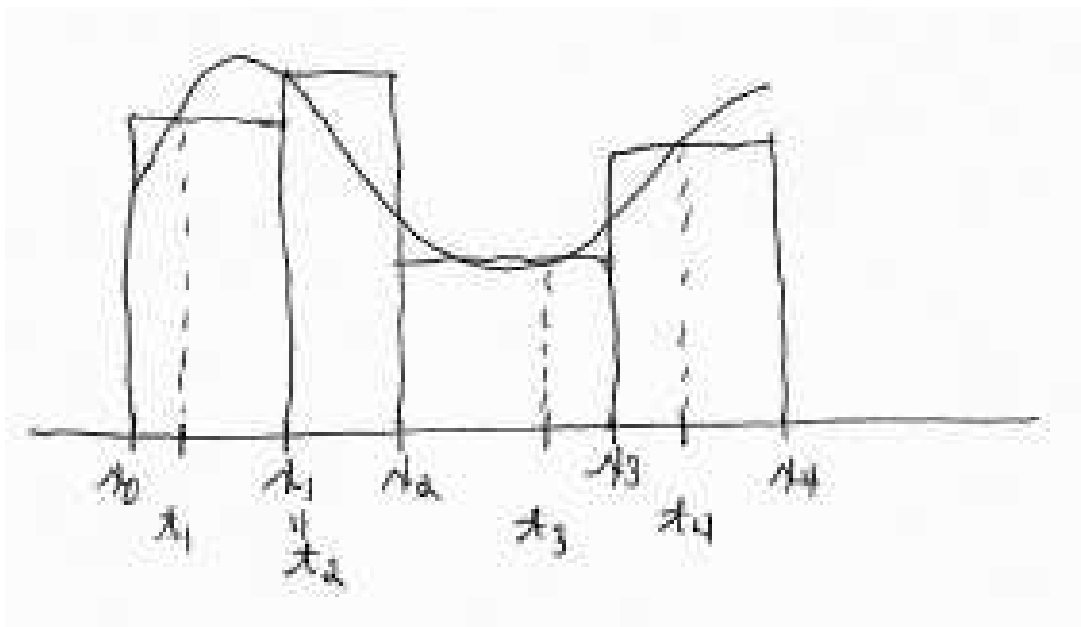


The norm (or mesh) of P is

$$\|P\| = \max \{x_1 - x_0, x_2 - x_1, \dots, x_n - x_{n-1}\}.$$

For a tagged partition \dot{P} , the Riemann sum of $f : [a, b] \rightarrow \mathbb{R}$ corresponding to \dot{P} is

$$S(f; \dot{P}) = \sum_{i=1}^n f(t_i)(x_i - x_{i-1}).$$



DEFINITION (7.1.1). A function $f : [a, b] \rightarrow \mathbb{R}$ is Riemann integrable on $[a, b]$ if

$$\exists L \in \mathbb{R} \ni \forall \epsilon > 0 \exists \delta_\epsilon > 0 \ni$$

if \dot{P} is any tagged partition of $[a, b]$ with $\|\dot{P}\| < \delta_\epsilon$, then

$$|S(f; \dot{P}) - L| < \epsilon.$$

The set of all Riemann functions on $[a, b]$ is denoted $\mathcal{R}[a, b]$.

NOTE.

$$L = \int_a^b f = \int_a^b f(x) dx = \int_a^b f(t) dt, \text{ etc.}$$