



## Interval Partitions

### 1 Why

We partition a real interval into interval pieces.

### 2 Definition

An *interval partition* is a finite partition of a closed real interval.

An interval partition is *regular* if all pieces except the largest are closed on the left and open on the right and the largest is closed.

Any regular interval partition with  $n - 1$  elements can be represented by  $n + 1$  real numbers: the endpoints of each interval. We call these the *cut points* of the interval partition.

#### 2.1 Notation

Let  $R$  denote the set of real numbers. Let  $[a, b]$  a closed interval in  $R$  with endpoints  $a, b \in R$ .

Consider a regular partition. of  $[a, b]$  with  $n - 1$  pieces. We can identify its cut points:

$$a = a_1 < a_2 < \dots < a_{n-1} < a_n = b.$$

The pieces of the partition are:

$$[a_1, a_2), [a_2, a_3), \dots, [a_{n-2}, a_{n-1}), [a_{n-1}, a_n].$$