



# Set Specification

## 1 Why

We specify a subset of a known set via a property.

## 2 Definition

TODO: add the axiom

Let  $A$  be a nonempty set. We use the notation

$$\{a \in A \mid \text{---} \}$$

to indicate a subset of  $A$  that satisfies some property specified after the  $|$ . We read the symbol  $|$  aloud as “such that.” We read the whole notation aloud as “a in  $A$  such that...”

We call the notation *set-builder notation*. Set-builder notation avoids enumerating elements.

## 3 Example

For example, let  $L$  be the set of Latin letters and  $V$  the set of Latin vowels. A first notation for  $V$  is  $\{a, e, i, o, u\}$ . A second

notation for  $V$  is  $\{l \in L \mid l \text{ is a vowel}\}$ . We may prefer the second, in cases when it saves time. This notation is really indispensable for sets which have many members, too many to reasonably write down.