

Remark 3.62. [27F] In the exercise [029] the elements are identified using variables a_1, \dots, a_k that we may have denoted using other letters such as a, b, c, d, \dots . If we instead think of a_1, \dots, a_k, \dots as values of a function $a_i = a(i)$, $a : I \rightarrow X$ then the set $\{a_1, \dots, a_k, \dots\}$ always exists (for any choice of I) since it is the image of the function $\{a_1, \dots, a_k, \dots\} = \{x \in X : \exists i \in I, x = a_i\}$.