

## Countable and Uncountable Sets

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**Definition 0.1.** Let  $x$  be a set.  $x$  is countable iff  $|x| \leq \omega$ .

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**Definition 0.2.** Let  $x$  be a set.  $x$  is uncountable iff  $x$  is not countable.

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**Definition 0.3.** Let  $x$  be a set.  $x$  is countably infinite iff  $|x| = \omega$ .

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**Proposition 0.4.** Let  $x$  be a set. Then  $x$  is uncountable iff  $|x| > \omega$ .