

**Definition 1.** Let  $x$  be a set.  $x$  is *finite* iff  $|x| < \omega$ .

**Definition 2.** Let  $x$  be a set.  $x$  is *infinite* iff  $x$  is not finite.

**Proposition 3.** Let  $x$  be a set. Then  $x$  is finite iff  $|x| = n$  for some  $n \in \omega$ .

**Proposition 4.** Let  $x$  be a set. Then  $x$  is infinite iff  $|x| \geq \omega$ .

*Proof.*  $|x| \geq \omega$  iff  $|x| \not< \omega$ . ■

**Proposition 5.**  $\omega$  is infinite.