

**Definition :** A function  $f : D \rightarrow C$  is **one-to-one** (or injective) means for every  $a, b$  in the domain  $D$ , if  $f(a) = f(b)$  then  $a = b$ . **Definition:** For sets  $A, B$ , we say that **the cardinality of  $A$  is no bigger than the cardinality of  $B$** , and write  $|A| \leq |B|$ , to mean there is a one-to-one function with domain  $A$  and codomain  $B$ .