

## Definition

A **function**  $f: A \rightarrow B$  is a relation on  $A \times B$  such that

- The domain of  $f$  is all of  $A$ ;
- If  $(x, y_1) \in f$  and  $(x, y_2) \in f$  then  $y_1 = y_2$ .

## Review

- $f$  is **injective** if whenever  $(x_1, y) \in f$  and  $(x_2, y) \in f$ , we have  $x_1 = x_2$ ;
- $f$  is **surjective** if the range of  $f$  is  $B$ ;
- $f$  is **bijective** if:

$\forall a \in A, (a, \cdot)$  appears exactly once in  $f$ ;

$\forall b \in B, (\cdot, b)$  appears exactly once in  $f$ ;