Definition (Functions as relations)

Let A and B be sets. A relation $R \subseteq A \times B$ is a function if it satisfies the following two conditions:

- 1. for all $x \in A$ $\exists y \in B : xRy$;

for all
$$x_1 R v_1, x_2 R$$

$$11 \times_1 R \times_1 \times_2 R \times_2 \text{ holds}$$

2. for all
$$x_1 R y_1$$
, $x_2 R y_2$ holds:

$$1 x_1 R y_1, x_2 R y_2$$
 holds:

$$x_1 R y_1, x_2 R y_2$$
 holds:

$$x_1 = x_2$$

$$= y_2$$