

## Definition

Let  $\mathcal{R} \subseteq A \times B$  be a relation from  $A$  to  $B$ . The **(symmetric) conjugate** of  $\mathcal{R}$  is the relation

$$\mathcal{R}^* \subseteq B \times A,$$

with

$$\mathcal{R}^* = \{(y, x) : (x, y) \in \mathcal{R}\}.$$

- Basically, flip all of the pairs!
- If  $\mathcal{R}^* = \mathcal{R}$  we say  $\mathcal{R}$  is **symmetric**.