

## 0.1 Axiom of pairing

For any pair of sets,  $x$  and  $y$  there is another set  $z$  which containing only  $x$  and  $y$ .

$$\forall x \forall y \exists z \forall a [a \in z \leftrightarrow a = x \vee a = y]$$

### 0.1.1 For each set, there exists a set containing only that set

Take the axiom, but replace all instance of  $y$  with  $x$ .

$$\forall x \exists z \forall a [a \in z \leftrightarrow a = x \vee a = x]$$

$$\forall x \exists z \forall a [a \in z \leftrightarrow a = x]$$

### 0.1.2 For any finite number of sets, there is a set containing only those sets

### 0.1.3 For any finite number of sets, there is a set containing the intersection of those sets