

## Exercise 0.3.6

a) Wanting to show:  $A \cap (B \cup C) = (A \cap B) \cup (A \cap C)$

In order to prove this equivalence, we have to prove the implication both ways. We use two lemmas for this.

**Definition 1.1** (test) —  $A \cap (B \cup C) \implies (A \cap B) \cup (A \cap C)$

Let  $x \in A \cap (B \cup C)$ .

**Definition 1.2** — Test.

b)