Exercises

E3.75 [224] Prerequisites: [23X], [1Y5].

Given two relations $a \leq b$ and $a < b$ for $a, b \in A$, show that these are equivalent:

- $a \leq b$ is a (possibly partial) order relation and we identify

$$a < b = (a \leq b \wedge a \neq b) \quad ;$$

- $a < b$ is an irreflexive and transitive relation and $\forall x, y \in A$ at most one of $x < y$, $x = y$, $y < x$ holds; and we identify

$$a \leq b = (a < b \vee a = b) \quad .$$

This latter $a < b$ is called **strict (partial) order**.