

**Exercise 3.124.** [206] Prerequisites: [07C], [07D], [07F]. Difficulty: \*.

At the beginning of the section we assumed that the ordering  $\leq$  on  $X$  be total. The definitions of interval in [07C] and [07D] however, they can also be given for an order that is not (necessarily) total. What happens in exercise [07F] when the order is not total? Which result is true, which is false, and if so what counterexample can we give?