Definition 3.81. [229]*Given* $x, y \in X$ *remember that* $x < y$ *means* $x \leq y \wedge x \neq y$.

- *When we have that* $x \leq y$ *or* $y \leq x$ *we will say that the two elements are* "comparable". *Conversely if neither* $x \leq y$ *nor* $y \leq x$ *then we will say that the two elements are* "incomparable".

- *An element* $m \in X$ *is called* maximal *if there is no element* $z \in X$ *such that* $m < z$.

- *An element* $m \in X$ *is called* minimal *if there is no element* $z \in X$ *such that* $z < m$.

- *An element* $m \in X$ *is called* maximum, *or* greatest element, *if, for any element* $z \in X$, $z \leq m$.

- *An element* $m \in X$ *is called* minimum, *or* least element, *if, for any element* $z \in X$, $z \leq m$.

Note that the definitions of minimum/minimal *can be obtained from* maximum/maximal *by reversing the order relation (and vice versa).*