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R-minimal element

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Let A be a set and R be a relation on A . Suppose that B is a subset of A . An element $a \in B$ is said to be **R -minimal in B** if and only if there is no $x \in B$ such that xRa . An R -minimal element in A is simply called **R -minimal**.

From this definition, it is evident that if A has an R -minimal element, then R is not reflexive. However, the definition of R -minimality is sometimes adjusted slightly so as to allow reflexivity: $a \in B$ is R -minimal (in B) iff the only $x \in B$ such that xRa is when $x = a$.

Remark. Using the second definition, it is easy to see that when R is a partial order, then an element a is R -minimal iff it is minimal.