Homework Sheet 1

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Problem 1

(1.)

The given definition of antisymmetry is not sensible because it implies that for any elements $a, a' \in A$, if $(a, a') \in R$, then $(a', a) \notin R$. When I hear "antisymmetric" i think of something that is the opposite of symmetric and symmetric means if $(a, a') \in R$ then $(a', a) \in R$. And opposite of that would be if $(a, a') \in R$, then $(a', a) \notin R$ as in the question but with a difference that it only applies when $a \neq a'$. Because otherwise in the current definition if we plug in $a = a'$, we get $(a, a) \in R \iff (a, a) \notin R$ which is a contradiction.