Math 503: 2nd problem set

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1. Show that a model complete theory with a prime model is complete.

2. Do the reals (as an ordered structure) realize any nonprincipal types over the empty set; over any finite set; over any set?

3. If $A \prec B$ and $B \prec A$, must A and B be isomorphic?

4. Is there a bound on the size of Archimedean fields? Is there a bound on the size of non-Archimedean fields?

5. Is there a countable saturated model of the theory of $(N, +, \cdot, 0, 1)$. If so construct it. If not, why not?