Math 503: 4th problem set

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1. Show that if T is strongly minimal and $a \in \mathrm{acl}(b, c)$, $a \neg \in \mathrm{acl}(b)$ then $c \in \mathrm{acl}(a, b)$. (Hint: to do this by hammer and tongs you must use the uniform bound on the size of an algebraic set and move to an elementary extension of the original model.)

2. Prove that any strongly minimal set D has a basis X such that D is algebraic closure of X, X is algebraically independent and any two such bases have the same cardinality.

3. Conclude that the theory of a strongly minimal set is categorical in every uncountable cardinal. What goes wrong in $\aleph_0$?