1. Show that a nonempty, countable, complete metric space $(X, d)$ has an isolated point, that is, a point $x \in X$ such that $\{x\}$ is open.

2. Recall that a set $N$ is nowhere dense in a topological space $(X, T)$ if the interior of the closure of $N$ is the empty set, that is, $N^0 = \emptyset$.
   a. Show that if $D$ is open and dense in $X$ then the complement $D^c$ is closed nowhere dense in $X$.
   b. Show that if $N$ is nowhere dense in $X$ then the complement of $N$ is open and dense in $X$. 