Name: _____ Score (Out of 7 points):

1. Let X be a nonempty finite set, say, $X = \{x_1, x_2, \ldots, x_n\}$ for some $n \in \mathbb{N}$. Let d be a metric on X.

   (a) (4 points) Prove that, for any point $x_i \in X$, the singleton set $U = \{x_i\}$ is open.

   (b) (2 points) Prove that *every* subset $U \subseteq X$ is open.
   Hint: Write U as a union of singleton sets.

   (c) (1 point) Prove that every subset $U \subseteq X$ is closed.