Name: _____ Score (Out of 10 points):

1. (10 points) Below are two metric spaces X and subsets A. For each subset, state the interior, closure, and boundary of A, and its set A' of accumulation points. **No justification needed.**

   $X = \mathbb{R}$ with the Euclidean metric, A any nonempty **finite** subset.

   $\text{Int}(A) =$ _____ $\overline{A} =$ _____ $\partial A =$ _____ $A' =$ _____

   $X = \mathbb{R}$ with the Euclidean metric, A is the subset of **irrational** real numbers.

   $\text{Int}(A) =$ _____ $\overline{A} =$ _____ $\partial A =$ _____ $A' =$ _____

   $X = \mathbb{R}$ with the Euclidean metric, $A = \left\{ \left(\frac{-1}{2}\right)^n \;\middle|\; n \in \mathbb{N} \right\}$.

   $\text{Int}(A) =$ _____ $\overline{A} =$ _____ $\partial A =$ _____ $A' =$ _____

   X is the open interval $(0, 2)$ with the Euclidean metric, $A = \left\{ \frac{1}{n} \;\middle|\; n \in \mathbb{N} \right\}$.

   $\text{Int}(A) =$ _____ $\overline{A} =$ _____ $\partial A =$ _____ $A' =$ _____

   $X = \mathbb{R}$ with the **discrete** metric, $A = (0, 1)$.

   $\text{Int}(A) =$ _____ $\overline{A} =$ _____ $\partial A =$ _____ $A' =$ _____