

Name: _____ Score (Out of 8 points):

1. (2 points) Let (X, d) be a metric space, and let $A \subseteq X$. Define an *accumulation point* of A .

2. (3 points) Show that a **finite** subset A of a metric space (X, d) has no accumulation points.

3. (3 points) Let (X, d) be a metric space, and let $A \subseteq X$. Show that x is an accumulation point of A if and only if the following property holds: every open neighbourhood U of x contains a point of A distinct from x .