

Name: \_\_\_\_\_ Score (Out of 5 points):

1. (4 points) Let  $(X, d)$  be a metric space, and let  $A \subseteq X$ . Show that, if  $x \in \overline{A}$ , then there exists a sequence of points in  $A$  converging to  $x$ .

2. (1 point) If the following statement is true, write **True**. Otherwise, state a counterexample. No justification needed.

Let  $X$  be a metric space, and let  $A, B \subseteq X$ . Then  $\text{Int}(A \cup B) = \text{Int}(A) \cup \text{Int}(B)$ .