

Here are homework for 3.2 that I'd like to collect for grading:

- (1) Prove that A is open if and only if A equals its interior $\overset{\circ}{A}$.
- (2) Consider the set of rationals, \mathbb{Q} , as a subset of the metric space \mathbb{R} . What is $\overline{\mathbb{Q}}$, and what is $\overset{\circ}{\mathbb{Q}}$, with proof.
- (3) In \mathbb{R} , consider the set $A = [0, 1[\cup]1, 2] \cup \{3\}$. Find each of the sets $\overset{\circ}{A}$, \bar{A} , $\overset{\circ}{\bar{A}}$, $\bar{\overset{\circ}{A}}$, $\overset{\circ}{\bar{\overset{\circ}{A}}}$, $\bar{\overset{\circ}{\bar{\overset{\circ}{A}}}}$. (No formal proof required.)
- (4) Find an example of a set A in \mathbb{R} for which all seven sets mentioned in the previous problem (including A itself) are pairwise different. List them.