# MATH 633 (HOMEWORK 1)

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**Exercise.** (Problem 1)

- TODO
- Let $z \in \overline{A} \setminus A$. $z$ is a limit point of $A$ and $A \subset B$, so $z$ is a limit point of $B$. Since $B$ is closed, $z \in B$.

**Exercise.** (Problem 2)

- Not open, not closed, not compact. The boundary is $\{x + iy | |x| = |y| = 1\}$.
- Not open. Closed. Compact. The boundary is $A$.
- Not open. Closed. Not compact. The boundary is the real line.
- Open. Not closed. Not compact. The boundary is $\{0\}$.