

Math 319/320 Worksheet 4

Name:

School ID:

Problem 1. Find $\text{int}(S)$, S' , $\text{cl}(S)$ and $\text{bd}(S)$ if

- $S = [0, 1] \cup (1, 2)$

- $S = \bigcap_{n=1}^{\infty} [0, 1 + \frac{2}{n})$

- $S = [0, +\infty) \cap \mathbb{Q}$

Problem 2. True or false? Give a short proof or counterexample.

- If S is open and T is closed, then $S \setminus T$ is open.

- If S is not open, then S is closed.

- If S is closed, then $S' \subset S$.

Problem 3. Let $S \subset \mathbb{R}$ be non-empty. Show that $\text{int}(S)$ is an open set.