

Topology of the Reals Worksheet

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Exercises

- I. For each of the following subsets of real numbers, state their interior points, boundary points, accumulation points, and isolated points.
- (a) $S = \{1, 2, 3\}$
 - (b) $S = \{\frac{1}{n} : n \in \mathbb{N}\}$
 - (c) $S = [0, 3] \cup [3, 5)$
 - (d) $S = [0, 3] \cap [3, 5)$
- II. Classify each of the following sets as open, closed, neither, or both.
- (a) $S = \{\frac{1}{n} : n \in \mathbb{N}\}$
 - (b) $\mathbb{Q}$
 - (c) $\mathbb{R}$
 - (d) $\cap_{n=1}^{\infty} (0, \frac{1}{n})$
- III. Prove Theorem 1.3.