

Math S–101. Worksheet 8.

Closed Sets

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Closed Sets

Let (X, \mathbf{K}) be a topological space. A set A contained in X is *closed* if $\mathbf{K}(A) = A$.

Theorem 1 *Let (X, \mathbf{K}) be a topological space.*

1. X and \emptyset are closed.
2. If A_1, \dots, A_n are closed, then $A_1 \cup \dots \cup A_n$ is closed.
3. If $\{A_i | i \in I\}$ is any collection of closed sets (possibly infinite), then $\bigcap_{i \in I} A_i$ is closed.
4. The closure, $\mathbf{K}(A)$, of any subset A of X is the smallest closed subset of X containing A .

Problems

Be prepared to discuss Exercise 2 from Section 2.4 (pp. 30–31) in class.