Program for the midterm exam


Continuous maps - definition and main properties. Local continuity and its relation to continuity. Fundamental covers. Continuity of a map continuous on elements of a fundamental cover.

Topological structures on a set induced by maps to or from topological spaces. Subspaces of a topological space. Relativity of openness. Quotient space. Continuity of a quotient map.


Hausdorff axiom and uniqueness of limit. The first separation axiom and closedness of finite sets. Third and fourth separation axioms. Relations between separation axioms. Proofs of separation axioms for metric spaces.


Examples of quotient spaces. Möbius strip, Klein bottle, basic surfaces. Descriptions of the real projective space $\mathbb{RP}^n$ and their equivalences.