

Topology Qualifying Examination Topics

Complex Analysis

Elementary functions, power series, singularities, residues, contour integrals (chapters 1-7 of *Complex Variables and Applications* by Churchill and Brown).

Geometry-Topology

Calculus on manifolds: manifolds and submanifolds, mappings and regular values; vector fields; differential forms and integration on chains; Stokes' theorem; DeRham's theorem (all of *Calculus on Manifolds* by Spivak or *Analysis on Manifolds* by Munkres).
Fundamental group and covering spaces (chapters 2-5 of *A Basic Course in Algebraic Topology* by Massey); singular homology (chapters 7 and 9 of Massey).

I put *'s next to the problems which are instructive but which concern material which will not be on the qualifying exam. X is an near questions which are outside the scope of the exam altogether.