MATH 8307 Additional Problems for Homework Assignment #5 Due 03/09 INSTRUCTOR: Anar Akhmedov

- 1. Let M and N be a closed, connected manifolds of dimensions m and n. Show that if $m \neq n$, then M and N are not homotopy equivalent.
- 2. Let X be a closed, connected, non-orientable 3-manifold. Prove that $\pi_1(X)$ is an infinite group.