
Homework 6

Topology II

Winter 2016/17

Please, also have a look at Homework Set 5, since we have not discussed it.

Problem 1

- (a) Show that S^∞ is contractible. Why was that not true for S^n ?
- (b) Why are the Hawaiian earrings not a CW-complex?

Problem 2

Last week we studied the homology of T^2 and considered its representation as a square with opposite sides identified in the correct way. Then we cut out a smaller square D and chose a 1-cycle a on the boundary of D which represents a homology class which generates $H_1(\partial D)$.

- (a) Complete the construction of a 2-chain b in $T^2 \setminus D$ such that

$$\partial b = a.$$

- (b) Provide a similar argument for the Klein bottle