Math 534B Homework 5.

Due 3/3

1) Any group G can be written as a set of generators $\{a_\alpha\}$ and relations $\{r_\beta\}$. Use induction and Van Kampen to show that any group with finite sets of generators and relationsis the fundamental group of some topological space by considering $\bigvee_\alpha S^1$ and then attaching disks D^2 along their boundaries determined by words in the relation. (Note: these are, in fact, two dimensional cell complexes).

2) Hatcher 1.3, Exercise 12.

3) Hatcher 1.3, Exercise 16.

4) Hatcher 1.3, Exercise 18. (For more fun, think about this in the context of problem 1 and a cell decomposition of the torus!)

More problems (don't turn in):

Hatcher 1.3, Exercises 15, 17, 27