

Notes on HW 1

The problems that were graded were:

2, 4a, Problem #4 from Hatcher page 28 (on cut points), 7a.

I read some of your examples of problem 8 from Hatcher, and was very impressed in a few cases! (this problem was not graded though).

Notes:

If you struggled with problem 2, you might want to look up a complete proof. For instance, Munkres "Topology" Theorem 21.1. Problem 6 (continuous image of a compact set is compact) can also be found there, it is Theorem 26.5.

I was asked some questions about problem #1 from Hatcher page 28. Here is the solution and a hint at how to prove it

a) not connected (use D_1 and D_2 as the disjoint open sets)

b) connected

c) connected

You can show both b) and c) are path connected by explaining that D_1 (or the closure of D_1) and D_2 are path connected, and there is a path from a point in D_1 to a point in D_2 – take the straight line from center to center that passes through the point where the discs are tangent. In this manner, you can make a path between any two points in the sets.