

Math 141 Homework 5

Reading for this week: GP sections 1.5 and 1.6

Problems to hand in

1. Do the following problems from GP section 1.5:
4, 5, 8, 9
2. a) Do problem 1 from GP section 1.6. Go back to the problem on “bump functions” to find the function ρ used in the hint.
b) Now use this to show that, if f_0 is homotopic to f_1 , and f_1 is homotopic to f_2 , then f_0 is homotopic to f_2 .
3. Do the following problems from GP section 1.6:
3 (“smooth path-connectedness” of manifolds), 4, 6. The second part of question 6, asks you to try to give an example of a manifold that you think is simply connected, but not contractible. You do not need to give a proof. Hint: this manifold can be 2-dimensional!