

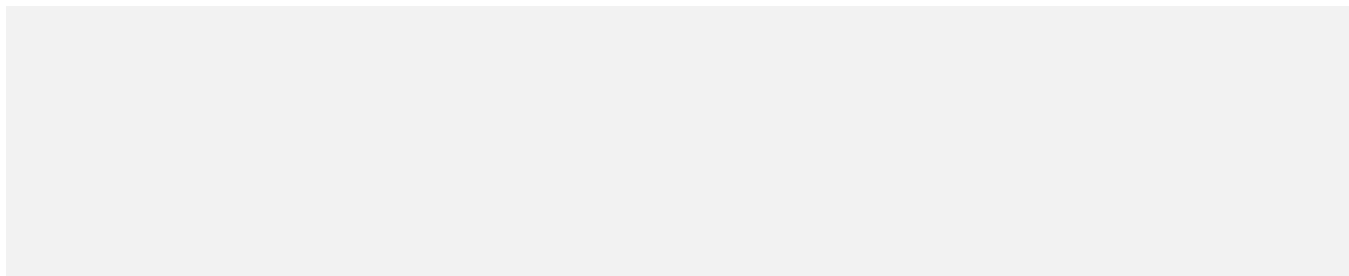
Introduction to Manifold Theory

Homework 2

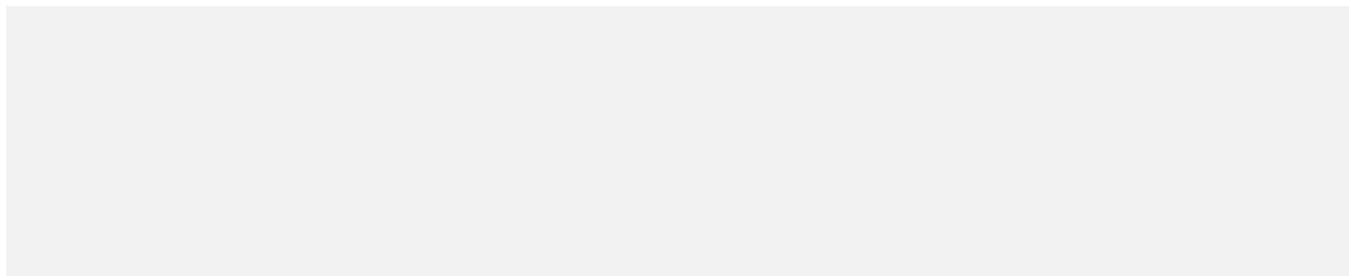
Nutan Nepal

September 6, 2022

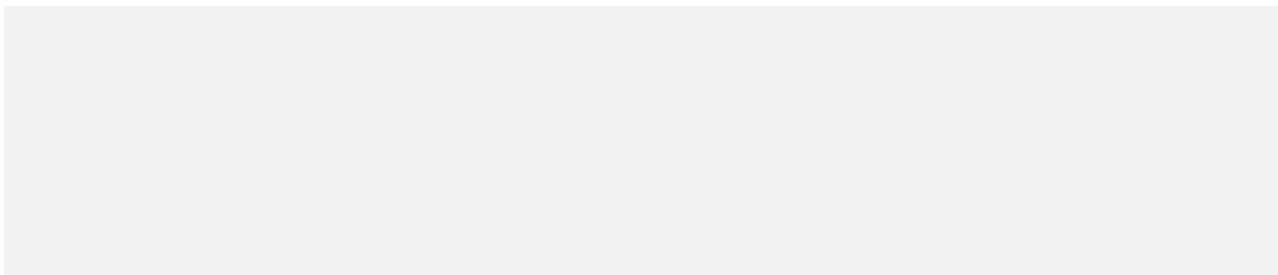
1. Do Exercise 2.6 (show that for topological spaces X, Y, Z , the “rearrange-the-parentheses” map from $(X \times Y) \times Z$ to $X \times (Y \times Z)$ is a homeomorphism).



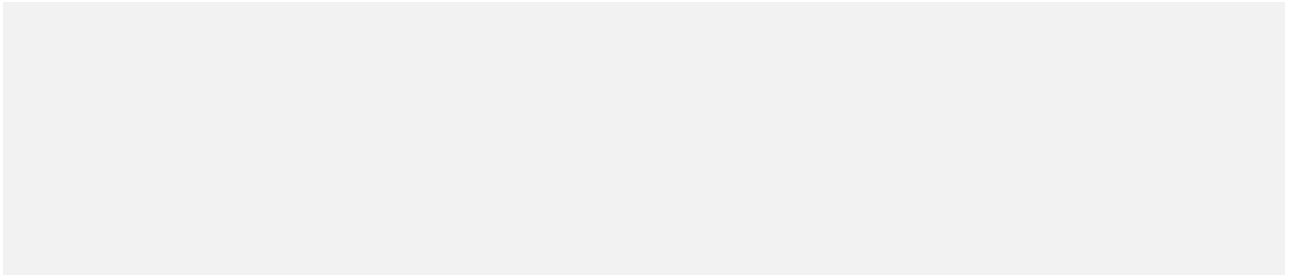
2. Do Exercise 2.7 (show that the product topology and the usual topology on \mathbb{R}^n agree).



3. The following exercises are about the “line with two origins” of Example 2.44, which we will call X .
 - (a) Show that the construction in Example 2.44 defines a topology on X .



(b) Show that with this topology, X is locally homeomorphic to \mathbb{R} .



(c) Show that X is not Hausdorff.

