

The goal of the thesis is proving that the space \mathbb{R}^3 with standard topology is not homeomorphic to the second power of any topological space, and to properly generalise the statement. The statement is proved in two different ways in the thesis. The first approach works with the notion of orientation of a homeomorphism from \mathbb{R}^n to \mathbb{R}^n . The second approach views the problem through lens of so called small inductive dimension of a topological space. Both of those concepts are set up rigorously and their important properties are described and mostly proven.