Master degree

The topic of work for dyadic space. We will present some introductory issues to the problem of dyadic spaces and their properties.

In the first chapter, we will discuss about basic definitions and describe compact metric spaces. Then we will define the Cantor set in an arithmetic and geometric way and present the most important properties of the set. Finally, we will formulate a theorem that each compact metric space is a continuous image of the Cantor set and we will prove this theorem.

In the next chapter we will describe the problem of cardinal numbers, their properties and usage examples. We will formulate the most important definitions, recall the importance of the Hausdorff space and the Tikhonov space. This will allow to analyze the Cantor set also in compact spaces. Finally, we will define the layer and prove its properties.

The final chapter will deal with the generalized Cantor's cube and its special dense subsets. First, we will provide the definition of Cantor's cube. We will prove three lemmas with dense subsets, and then we formulate the two most important theorems, Shanin's caliber theorem and Marczewski's theorem and we will prove them. We will talk about celularity and its properties. We will learn the definition of dyadic space and its basic properties.