INTRODUCTION AND SUMMARY

The Theory of Ordered Sets has many applications in other areas of mathematics including algebra, set theory, combinatorice and linear programming. Also many practical problems such as scheduling has its settings as a problem in partial orders.

In this thesis we concentrate on two main problems concerning partially ordered sets. These problems are the dimension problem and the jump-number problem.

A brief description of the contents of the thesis is as follows.

In Chapter one we summarize some basic concepts, definitions and theorems about posets.

In Chapter two we present the definition of the dimension of a poset and study it as a parameter.

In Chapter three we introduce the concepts of optimal linear extension, gready posets. We also study the jump-number problem for posets.

In Chapter four we are devoted to studying jum-critical posets. Some new results appear in this chapter, such as Theorems 4.3.1 and 4.3.2. We also give a list of one hundred sixteen 4-critical posets and this list is partially proved to complete.

Finally, the algorithm which determines the optimal linear extension for a given poset is obtained in chapter 5.