

This bachelor thesis focuses on scalar, vector and outer product, their history and applications. It aims to introduce the reader to the problems of vector algebra, highlighting the connections both between subjects and between different mathematical concepts. It highlights the fact that a single result can be arrived at by many paths, which is why multiple proofs are often given for one theorem.

The aim of this bachelor thesis is to convey in an understandable form the basics of vector calculus, its history and interdisciplinarity. The thesis includes a geometric and algebraic approach as well as a historical and didactic one.

The thesis is divided into eight chapters, of which the first six can be informally described as the theoretical part and the final two as the practical part. After a historical introduction, the reader is introduced to the basics of vector algebra, which are developed further in Chapters 3 and 4. An essential element in learning new information is to relate it to both familiar and new facts. Chapters 5 and 6 build on this idea. Chapter 5 discusses mathematical contexts that were not appropriate to include in other chapters and is followed by Chapter 6, which promotes interdisciplinarity. Fields such as physics, information technology and geography, which make extensive use of vector algebra, are mentioned. In Chapter 7, the reader can practice on selected problems to see if they have understood how to calculate vectors and matrices and if they can imagine an appropriate geometric representation under the text of the problem. The last chapter compares the selected textbooks from the perspective of vector algebra. How this topic is viewed in modern textbooks and which text to reach for when the topic of vectors is to be studied is what the reader will learn in this final chapter.