

In this thesis, we focus on creating a visual understanding of orientation of a real vector space and its subsequent connection to the mathematical definition. As a result, this thesis can be used as supplementary material in higher education or serve as inspiration for teachers. First, we develop the idea behind the equivalence of two bases, then we examine its connection to permutations of vectors in orthonormal basis, motivating the definition of parity of permutation. We continue by observing the behavior of the equivalence during a transition to the opposite half-space, noting the connection to volumes, and based on that, we motivate the concept of determinants. Next, we delve into the method of computing determinants, providing a complete derivation. Finally, we demonstrate how the determinant of a transition matrix between two bases relates to their equivalence and we define the orientation of vector space.