The focus of this thesis are the methods for computing the null space of matrices. Firstly we introduce the basic matrix factorization methods and how we can calculate the matrix null space from these factorizations. Then we describe the numerical properties of each of these methods for computing the matrix null space. In the final part we will compare these methods with respect to computation time and Frobenius norm for various types of matrices. The measurements and processing of the results into graphs is realised in MATLAB.