

This bachelor thesis consists of two chapters. In the first chapter, the continued fractions are defined, their basic characteristics are introduced and an algorithm for their calculation is demonstrated. Another important part of this chapter deals with the existence of a limit of a sequence of convergents. In the second chapter, there is an analysis of five mathematical problems that can be solved using the continued fractions: the golden ratio in photography, determination of the number of cogs inside the moon sphere of the Prague astronomical clock, calculation of the period for the lunar eclipse and for the opposition of Mars and the number of the tones in the construction of the pythagorean tone system. The appendix includes a library of functions in Python programming language for some of the calculations from the first chapter.