Comparing two methods of approximating the value of π in a computational context

To what extent can a method of approximation of the value π be computationally more efficient than another?

Word count:

Contents

1 Introduction

The value of π has been researched for many years, although under different names, and the amount of different approaches to reach the value is large. The value has been found through many processes, be it geometrically, algebraically or through other means.

This paper seeks to examine the extent at which two historical methods of approximation of the value π, namely the approaches suggested by the aforementioned mathematicians Madhava and Viète, differ in terms of computational efficiency and speed, and explain these differences.

2 Theoretical approach

2.1 Focus on two methods

For the sake of this paper, two different methods with similar convergence rates but different approaches have been chosen for comparison, the process for the original discovery of these methods will be explained.

2.1.1 Madhava's method

Madhava, known by other famous mathematicians of his time, as having discovered

2.1.2 Viète's method

3 Computational approach

3.1 Implementing

3.2 The variables

4 Analysis of the results