

A Key to Solving the Angle Trisection Problem

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Abstract

This paper describes the methodology (or approach) that was key to the solution of the angle trisection problem published earlier in article entitled, "*A Procedure For Trisecting An Acute Angle*." It was an approach that required first, designing a working model of a trisector mechanism, second, studying the motion of key elements of the mechanism and third, applying the fundamental principles of kinematics to arrive at the desired results. In presenting these results, since there was no requirement to provide a detailed analysis of the final construction, this information was not included. However, now that the publication is out, it is considered appropriate as well as instructive to explain more fully the mechanism analysis of the trisector in graphical detail, as covered in Section 3 of this paper, that formed the basis of the long sought solution to the age-old *Angle Trisection Problem*.

Keywords

Archimedes' Construction, College Geometry, College Mathematics, Angle Trisection, Trisector, Famous Problems in Mathematics, History of Mathematics, Mechanism Analysis, Kinematics, Geometer's Sketch Pad

1. Introduction

This paper is a sequel to its forerunner entitled, "*A Procedure For Trisecting an Acute Angle*," published earlier [1] where it presented a construction capable of dividing any arbitrary acute angle into three *exactly equal* parts using a straightedge and compass only [1] [2] [3] [4]. In presenting this construction, there was no need to describe the methodology for its development, since it was not required. However, given the fact that a) *The Angle Trisection* (one of the three unsolvable problems of Geometry, the other two being *the squaring of a circle* and *the doubling of a cube*), has been for centuries one of the most intriguing challenges for mathematicians, and b) nowhere else in the literature [2] [3] [4] [5] has the principles of kinematics [1] [6] [7] [8] been applied in tackling

Trisection Problem

Marguerite Edna Stagner



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