Abstract

This work studies the construction of algebraic curves by means of mechanical plotting tools designed by René Descartes. The work includes a brief biography of Descartes, an outline of his scientific method and a description of Descartes' views on curves, their construction and use. By means of dynamic geometry several curves established by Descartes are constructed. These include curves constructed by means of a drawing instrument composed of several rulers; a drawing instrument designed for the hyperbola and its different variations, in which the guiding line is replaced by one of conics in a special position. In the final part we present the construction of four ovals, which are usable in catoptric and dioptric that Descartes constructed by a point wise construction. All drawings are made in Cabri Geometry II and are accompanied by a derivation of the equations of the resulting curves. In deriving these equations we used only elementary algebraic methods, which could be used by Descartes himself and which are comprehensible by secondary school students.

Keywords:
Descartes, ruler device, curve, conchoid, trident, oval