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Real algebraic curves of constant width. (English) Zbl 1413.52003

Summary: S. Rabinowitz [Missouri J. Math. Sci. 9, No. 1, 23–27 (1997; Zbl 1097.52501)] constructed a parametric curve of constant width and expressed it as a plane algebraic curve; however, the algebraic curve also contains isolated points separate from the original curve. We show how to modify his example in order to produce a curve with no isolated points. We then conjecture a method for producing a family of such curves and prove the conjecture in several cases.

MSC:
52A10 Convex sets in 2 dimensions (including convex curves)
14H50 Plane and space curves
53A04 Curves in Euclidean and related spaces
14P05 Real algebraic sets

Keywords:
constant width; algebraic curves; isolated points; convex curves

Software:
CASA; PARI/GP

Full Text: DOI

References:
[1] M. Bardet, T. Bayen, On the degree of the polynomial defining a planar algebraic curve o
[10] The PARI Group, PARI/GP version

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