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Parametric representations of polynomial curves using linkage.

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Summary: This paper shows the construction of linkages that draw parts of three well-known curves characterized by distances from points and lines: the lemniscate of Bernoulli, the Peaucellier-Lipkin linkage for a straight line, and Yates' parabola. Basic algebra, geometry and trigonometry are used to find parametric representations of the loci of points in the system of linkages.

Classification: G70 M50
Keywords: lemniscate of Bernoulli; Peaucellier-Lipkin linkage for a straight line; Yates' parabola; parametric representations; geometry software; Cinderella; visualization; loci; curves; conic sections; mathematical applications; mechanic linkages; engineering; interconnected rods; fixed points; pivots; drivers; movers; markers
https://www.parabola.unsw.edu.au/files/articles/2010-2019/volume-52-2016/issue-1/vol52_no1_2.pdf