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LENGTH OF LEMNISCATA BERNOULLI ARC

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Annotation. The Bernoulli lemniscate curve can be used in applied studies of the shape of sliding and the shape of geophysical masses and natural objects, conjugations of trajectories of straight and rounded paths, movements of rod-hinge structures, equal gravitational movements along the lemniscate curve and its chord (tautochronicity), etc. The exact determination of the length of the lemniscate arc is due to the need to use an incomplete elliptical integral of the 1st kind (ungraspable), which makes it difficult to carry out analytical calculations, etc. The proposed elementary dependence for determining the length of the Bernoulli lemniscate arc gives a very close coincidence (< 1-2%) with the basic data of the numerical solution and is recommended for use in solving applied problems in various fields of science and technology.

Keywords: 4-order curves, Bernoulli lemniscate, length of lemniscate arc, elliptic integrals of 1 genus, tautochronicity of curve

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