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CURVES OF THE FOURTH ORDER AND THEIR PLACE IN OUR LIVES

We are surrounded by interesting world of Mathematics. While studying and exploring its laws, we express different opinions, prove or deny. We can not imagine our life without Maths because everything that surrounds us can be described with the help of mathematical curves or mathematical shapes, surfaces. Mathematics is truly omnipotent. It helps us not only to describe the shape of a living organism and plants, but also to follow their changes. Even Galileo said: *"Nature speaks the language of Mathematics."*

The concept of line arose in human consciousness in prehistoric times. The path of a thrown stone, an outline of flowers, plants leaves, twisting coastline and other natural phenomena since ancient times attracted person's attention. They formed the basis to define the line concept. It took much time for our ancestors to start comparing the shapes of curves.

The first drawings on the walls of caves, primitive designs for household items show that people were able not only to distinguish line from the curve, but also to distinguish individual curves.

The same things happen in modern life. Everything that surrounds us consists of a certain set of features that are composed of various curves. Curves are widely used in daily routine, art, architecture, nature because of their frequent occurrence.

The study of curves and their properties will broaden the geometric representation, enhance knowledge, increase interest in geometry, create a profound basis for further studies in Mathematics, Physics and other sciences.

We would like to show some examples of curves which have practical usage in our life.

The first is *Lemniscate of Bernoulli.* The technique Lemniscate is used in particular as a transition curve on small radius rounding (railway lines in mountainous areas, on tram tracks). Equipotential field lines created by two parallel currents that go through long wires in plane, which are perpendicular to them, in some cases are Lemniscate.

It is interesting that Lemniscate of Bernoulli is used now while constructing tram lines in those places where the train makes a small radius turn. We also meet Lemniscate of Bernoulli in ordinary everyday things: in Mathematics it is a sign of infinity or figure eight, in life we meet it in glasses, bow tie.

The second curve is *Limaçon of Pascal*. It is a plane algebraic curve of the fourth order. Limaçon of Pascal is widely used in engineering. It is used as a line for eccentric profile.

The third curve is *Cardioid*. It is used as a line for drawing profiles, if you want the profile sliding rod to make harmonic oscillations. Cardioid microphones are used in places with extra noise and sound reflections.

In this paper we have described curves of the fourth order, their types, and also how these curves are widely used in our life. Today Mathematics is important not only as a science, but it also has found its place in our daily lives.

LITERATURE

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