

The notion of a curve played important role in the history of mathematical thought. This dissertation is focused on the conception of a curve in analysis, point set theory and topology. The rectification of curves and the notion of arc length are considered in connection with the history of analysis from antiquity to the beginning of the 20th century. “Measurement of curves” is also discussed from the measure–theoretic viewpoint and various definitions of linear measure and fractional dimension are described. Historically, there are two main approaches to understanding curves. Jordan defined a curve as a continuous image of a closed interval. However, his definition appeared to be too wide, since it was met by objects such as the Peano curve. In the point set theory, a curve is considered to be a one-dimensional continuum. The development of the dimension theory and the continuum theory, starting with the pioneering work of Bolzano, was motivated by the search for rigorous topological definition of a curve, a surface etc. Among “pathological” curves, that were often introduced as counterexamples in the development of modern analysis, we can find early examples of fractals. The fractal theory motivated further study of mathematical properties of these curves in the late 20th century, such as self-similarity and self-affinity.