On \(m\)-Convexity on Real Linear Spaces

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Abstract:

In 1984, Toader presented a chronological report on some generalizations of the convexity of real functions and proposed a new one, the class of so-called \(m\)-convex functions. At the end of that paper, he defined the underlying concept of \(m\)-convex sets in a more general setting (linear spaces) to describe any possible relationship between the notion of \(m\)-convexity of functions and the well-known convexity properties.

Even though he introduced a brand new concept, the notion of \(m\)-convexity of sets, he did not establish anything else about this class of sets. In 1986, he retook this concept, but again focused on the functional treatment.

Finally, in 1988, he described some basic results about \(m\)-convexity of sets, but no longer continued working on this topic. Since then, there have been many papers published on this subject, but none of them from the perspective of \(m\)-convexity of sets.

The main aim of my talk is to show some development of the theory of \(m\)-convex sets. The main results that I will present establish the structural properties of the class of \(m\)-convex sets, the description of the \(m\)-convex hull, and also a result of Carathéodory-type for this class of sets.