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Role of the compactness in fixed point theory

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Abstract : The compactness assumption is a very important concept in fixed point theory. It provides powerful tools for proving the existence, uniqueness, and convergence of fixed points. It is also an important tool in topological degree theory. The Brouwer fixed point theorem, the Banach fixed point theorem, the Arzelà-Ascoli theorem, and topological degree theory are just a few examples of the applications of compactness in fixed point theory. Some random fixed point theorems on b -metric space are given also.

Keywords : Arzelà-Ascoli theorem, Banach fixed point, b -metric space, Brouwer fixed point, compactness, random fixed point, topological degree,

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