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In Memoriam Adelina Georgescu

FIXED POINTS THEOREMS IN MULTI-METRIC SPACES*

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Abstract

The aim of the present article is to give some general methods in the fixed point theory for mappings of general topological spaces. Using the notions of the multi-metric space and of the E-metric space, we proved the analogous of several classical theorems: Banach fixed point principle, Theorems of Edelstein, Meyers, Janos etc.

MSC: 54H25, 54E15, 54H13, 12J17, 54E40.

keywords: fixed point, m-scale, semifield, multi-metric space, E-metric space, pseudo-metric.

1 Introduction

Any space is considered to be Tychonoff and non-empty. We use the terminology from [12, 13].

Let $\mathbb{R}$ be the space of real numbers.

A pseudo-metric on a set X is a function $\rho : X \times X \longrightarrow \mathbb{R}$ satisfying the following conditions: $\rho(x,x)=0$, $\rho(x,y)=\rho(y,x)$ and $\rho(x,z)\leq\rho(x,y)+\rho(y,z)$ for all $x,y,z \in X$. The number $\rho(x,y)$ is called the ρ-distance between the points x,y.

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