

FIXED POINT THEOREMS FOR A THIRD POWER TYPE CONTRACTION MAPPINGS IN G -METRIC SPACES

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Abstract

In this paper, we introduce a new third power type contractive condition in the G -metric spaces, and several new fixed point theorems are established in complete G -metric space. The obtained results in this paper extend the recent relative results.

Keywords: G -metric space, third power type contraction mappings, fixed point.

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1. Introduction

Metric fixed point theory is an important mathematical discipline because of its applications in areas as variational and linear inequalities, optimization theory. In 1992, Dhage[2] introduced the concept of D -metric space. Unfortunately, it was shown that certain theorems involving Dhage's D -metric spaces are flawed, and most of the results claimed by Dhage and others are invalid. These errors are pointed out by Mustafa and Sims[7]. In 2006, a new structure of generalized metric spaces was introduced by Mustafa and Sims[8] as appropriate notion of generalized metric space called G -metric spaces. Some other papers dealing with G -metric spaces are those in[1], [3]-[6], [9]-[11]. In this paper, we will prove some general fixed point theorems for third power type contractions mapping in complete G -metric spaces.

Throughout the paper, we mean by \mathbb{N} the set of all natural numbers.

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