

A NOTE ON FIXED POINT THEOREMS FOR RATIONAL GERAGHTY CONTRACTIVE MAPPINGS IN ORDERED b -METRIC SPACES

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ABSTRACT. In this short note we prove the existence of fixed points for non-decreasing mappings in ordered b -metric spaces. Our results improve the recent results, established by F. Zabihi and A. Razani [Fixed point theorems for hybrid rational Geraghty contractive mappings in ordered b -metric spaces, Journal of Applied Mathematics, Volume 2014, Article ID 929821, 9 pages], with much more general conditions and shorter proofs. An example is given to show the superiority of our generalization.

1. INTRODUCTION AND PRELIMINARIES

In order to start, we first need to briefly recall some basic terms and notions as follows.

Definition 1.1. [2, 3] Let X be a (nonempty) set and $s \geq 1$ be a given real number. A function $d : X \times X \rightarrow [0, \infty)$ is called a b -metric on X if, for all $x, y, z \in X$, it satisfies

- (b1) $d(x, y) = 0$ if and only if $x = y$;
- (b2) $d(x, y) = d(y, x)$;
- (b3) $d(x, z) \leq s[d(x, y) + d(y, z)]$.

In this case, the pair (X, d) is called a b -metric space or a metric type space.

Further, for more notions such as b -convergence, b -completeness, b -Cauchy sequence in the setting of b -metric spaces, the reader is referred to [1, 3–10, 13, 14, 16–18].

Definition 1.2. [16] A triple (X, \preceq, d) is called a partially ordered b -metric space if (X, \preceq) is a partially ordered set and d is a b -metric on X .

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