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RATIONAL TYPE FIXED POINT THEOREM IN 2-METRIC SPACE

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Abstract: In this paper we have established a fixed point theorem in 2-metric space, using a more general rational type contraction. Here we have extended the result of Olatinwo et. al [14] in 2-metric space.

Keywords and Phrases: Generalized contraction principle, 2-metric, fixed point, Cauchy sequence, convergent sequence.

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1. Introduction

One of the generalization of a metric space is 2-metric space. Gahler [7], [8] introduced the concept of 2-metric space. Geometrically in plane,2-metric function abstracts the properties of the area function for Euclidean triangle just as a metric function abstracts the length function for Euclidean segment.
It is precisely defined as follows

Definition 1.1. [19] *Let X be a non-empty set and $d : X \times X \times X \to \mathbb{R}^+$. If for all $x, y, z,$ and u in X we have*
$(d_1) d(x, y, z) = 0$ *if at least two of x, y, z are equal.*
(d_2) *for all $x \neq y$, there exists a point z in x such that $d(x, y, z) \neq 0$.*
$(d_3) d(x, y, z) = d(x, z, y) = d(y, z, x) = \ldots$ *and so on*
$(d_4) d(x, y, z) \leq d(x, y, u) + d(x, u, z) + d(u, y, z)$.
then d is called a metric on X and the pair (X, d) is said to be a 2-metric space.