

On the Convergence of Ishikawa Iterates Defined by Nonlinear Quasi-Contractions

Ivan D. Arandjelović

University of Belgrade - Faculty of Mechanical Engineering
Kraljice Marije 16, 11000 Beograd, Serbia
iarandjelovic@mas.bg.ac.yu

Miloje Rajović

University of Kragujevac - Faculty of Mechanical Engineering
Dositejeva 19, 36000 Kraljevo, Serbia

Veda Kilibarda

College of Railway Engineering and Services
Zdravka Čelara 14, 11000 Beograd, Serbia

Abstract

In [8] Lj. B. Ćirić proved general result on the convergence of Ishikawa iterates of nonlinear quasi - contractions defined on Takahashi convex metric space. In this paper we present two generalizations of Ćirić's result.

Mathematics Subject Classification: 54H25, 47H10

Keywords: fixed point, nonlinear quasi contraction, Ishikawa iterates

1 Introduction

Let X be a nonempty set and $f : X \rightarrow X$ arbitrary mapping. $x \in X$ is a fixed point for f if $x = f(x)$. If $x_0 \in X$, we say that a sequence (x_n) defined by $x_n = f^n(x_0)$ is a sequence of Picard iterates of f at point x_0 or that (x_n) is the orbit of f at point x_0 .

Let (α_n) and (β_n) be two sequences of real numbers. Let (X, d) be a Takahashi convex metric space and W Takahashi convex structure on X . Then

