Ishikawa Iteration Process In L_p Space

Upendra Kumar Singh

In this chapter we have discussed Ishikawa Iteration process in L_p apace which are of much importance in solving the problems related to economics and game theory. It is our purpose in this chapter to prove convergence theorems for both the Ishikawa iteration process and the Mann iteration process for continuous quasi-con tractive mappings in L_p space for $1 < p \leq q$. Our method will, in addition, show that the comkpectness assumption on K as given by Chidume [9] and Rhoades [22], is not needed. For particular choices of the real sequences (a_n), (p_n) and (C_n) explicit convergence rates are calculated which, for $p = 2$, agree with results. The results of this chapter, together with earlier results of the authors chidume [9] and [6], then show that either the Ishikawa or Mann iteration process can be used to approximate the fixed point of a continous quasi-con-tractive mappings in L_p or I_p, $4 < p <$. In all cases, no compactness assumption is needed. Furthermore, then main tools in our method of proof are of independent interest.