

**ON THE RATE OF CONVERGENCE OF SOME  
ITERATION METHODS FOR ZAMFIRESCU MAPS**

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ABSTRACT. We show that the coefficients have important role in rate of convergence for Zamfirescu contractive type maps in some iteration methods. In this way, we give two numerical examples to illustrate our results.

REFERENCES

- [1] S. Akbulut and M. Ozdemir: *Picard iteration converges faster than Noor iteration for a class of quasi-contractive operators*, Chiang Mai J. Sci., **39**(2012), No. 4, 688-692.
- [2] V. Berinde: *Picard iteration converges faster than Mann iteration for a class of quasi-contractive operators*, Fixed Point Theory Appl., **2004**(2004) Article ID 716359, 9 pages.
- [3] V. Berinde: *On the convergence of the Ishikawa iteration in the class of quasi-contractive operators*, Acta Math. Univ. Comenian. (N.S.), **73**(2004), No. 1, 119-126.
- [4] V. Berinde: *Iterative Approximation of Fixed Points*, Springer-Verlag 2007.
- [5] V. Berinde: *A convergence theorem for Mann iteration in the class of Zamfirescu operators*, An. Univ. Vest Timiș. Ser. Mat.-Inform., **45**(2007), No. 1, 33-41.
- [6] A.O. Bosede: *Noor iterations associated with Zamfirescu mappings in uniformly convex Banach spaces*, Fasc. Math., **42**(2009), 29-38.
- [7] R. Chugh and S. Kumar: *On the rate of convergence of some new modified iterative schemes*, Amer. J. Comput. Math., **3**(2013), 270-290.
- [8] S. Ishikawa: *Fixed points by a new iteration method*, Proc. Amer. Math. Soc., **44**(1974), 147-150.
- [9] W.R. Mann: *Mean value methods in iteration*, Proc. Amer. Math. Soc., **4**(1953), 506-510.
- [10] M.A. Noor: *New approximation schemes for general variational inequalities*, J. Math. Anal. Appl., **251**(2000), 217-229.
- [11] A. Rafiq: *Fixed points of Ćirić quasi-contractive operators in normed spaces*, Math. Commun., **11**(2006), No. 2, 115-120.
- [12] B.E. Rhoades and Z. Xue: *Comparison of the rate of convergence among Picard, Mann, Ishikawa, and Noor iterations applied to quasicontractive maps*, Fixed Point Theory Appl., **2010**(2010), Article ID 169062, 12 pages.
- [13] H. Xu: *A Note on the Ishikawa iteration scheme*, J. Math. Anal. Appl., **167**(1992), 582-587.
- [14] T. Zamfirescu: *Fix point theorems in metric spaces*, Arch. Math., **23**(1972), 292-298.

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