Iterative approximations of common fixed points with simulation results in Banach spaces

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Abstract

In this article, we propose the Abbas-Nazir three step iteration scheme and employ the algorithm to study the common fixed points of a pair of generalized α-Reich-Suzuki non-expansive mappings defined on a Banach space. Moreover, we explore a few weak and strong convergence results concerning such mappings. Our findings are aptly validated by non-trivial and constructive numerical examples and finally, we compare our results with that of the other noteworthy iterative schemes utilizing MATLAB 2017a software. However, we perceive that for a different set of parameters and initial points, the newly proposed iterative scheme converges faster than the other well-known algorithms. To be specific, we give an analytic proof of the claim that the novel iteration scheme is also faster than that of Liu et al.

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