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Title: Convex solutions of the polynomial-like iterative equation in Banach spaces

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Although convex (concave) solutions were investigated for the polynomial-like iterative equation on a compact interval of $\mathbb{R}$, there are much more difficulties in discussion on convexity of solutions in Banach spaces. In this paper we consider a partial order in Banach spaces, which is defined by an order cone, and discuss monotonicity and convexity of operators under iteration in Banach spaces. Then we give the existence of monotone solutions in the ordered real Banach spaces and further obtain conditions under which the solutions are convex or concave in the order. Moreover, the uniqueness and continuous dependence of those solutions are also discussed.

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