

TWO NEW CHARACTERIZATIONS OF PREINVEX FUNCTIONS

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Abstract. In this paper, we obtain two new characterizations of preinvex functions. More specifically, a real valued function is preinvex function if and only if it is intermediate-point preinvex and semi-strictly quasi-preinvex; and a real valued function is preinvex function if and only if it is intermediate-point preinvex and semi-locally semi-strictly quasi-preinvex.

Keywords. Invex set, preinvex function, semi-strictly quasi-preinvex function, semi-locally semi-strictly quasi-preinvex function, characterization, intermediate-point preinvexity.

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References

- [1] S. R. Mohan, S. K. Neogy, On invex sets and preinvex functions, *Journal of Mathematical Analysis and Applications*, **189**, (1995) 901-908.
- [2] T. Weir, B. Mond, Pre-invex functions in multiobjective optimization, *Journal of Mathematical Analysis and Applications*, **136**, (1988) 29-39.
- [3] T. Weir, V. Jeyakumar, A class of nonconvex functions and mathematical programming, *Bulletin of the Australian Mathematical Society*, **38**, (1988) 177-189.
- [4] X. M. Yang, D. Li, On properties of preinvex functions, *Journal of Mathematical Analysis and Applications*, **256**, (2001) 229-241.
- [5] X. M. Yang, D. Li, Semistrictly preinvex functions, *Journal of Mathematical Analysis and Applications*, **258**, (2001) 287-308.

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