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**General biconvex functions and bivariational-like inequalities.** (English) [Zbl 07487973]  

Summary: In this paper, we consider and introduce some new concepts of the biconvex functions involving an arbitrary bifunction and function. Some new relationships among various concepts of biconvex functions have been established. We have shown that the optimality conditions for the general biconvex functions can be characterized by a class of bivariational-like inequalities. Auxiliary principle technique is used to propose proximal point methods for solving general bivariational-like inequalities. We also discussed the conversance criteria for the suggested methods under pseudo-monotonicity. Our method of proof is very simple compared with methods. Several special cases are discussed as applications of our main concepts and results. It is a challenging problem to explore the applications of the general bivariational-like inequalities in pure and applied sciences.

MSC:  
26B25 Convexity of real functions of several variables, generalizations  
49J40 Variational inequalities  
90C33 Complementarity and equilibrium problems and variational inequalities (finite dimensions) (aspects of mathematical programming)

Keywords:  
biconvex functions; monotone operators; biconvex functions; strongly biconvex functions

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References:  