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Preservation of quasi- K -concavity and its applications. (English) Zbl 1231.90020
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Summary: We establish a new preservation property of quasi- K -concavity under certain optimization operations. One important application of the result is to analyze joint inventory-pricing models for single-product periodic-review inventory systems with concave ordering costs. At each period, an ordering quantity and a selling price of the product are determined simultaneously. Demand is random but sensitive to the price. The objective is to maximize the total expected discounted profit over a finite planning horizon. Assuming that demand is a deterministic function of the selling price plus a random perturbation with a positive Pólya or uniform distribution, we show that a generalized (s, S, p) policy is optimal.

MSC:

90B05 Inventory, storage, reservoirs
90C26 Nonconvex programming, global optimization

Cited in **3** Documents

Keywords:

inventory control; pricing; concave ordering cost; quasi- K -concavity; optimal policy

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