

Optimization problems, first order approximated optimization problems and their connections

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ABSTRACT.

In this paper, we attach to the optimization problem

$$\begin{cases} \min & f(x) \\ \text{s. t.} & x \in X \\ & g(x) \leq 0 \\ & h(x) = 0, \end{cases}$$

where X is a subset of \mathbb{R}^n , $f : X \rightarrow \mathbb{R}$, $g = (g_1, \dots, g_m) : X \rightarrow \mathbb{R}^m$ and $h = (h_1, \dots, h_q) : X \rightarrow \mathbb{R}^q$ are functions, the $(0, 1) - \eta$ - approximated optimization problem (AP). We will study the connections between the optimal solutions for Problem (AP), the saddle points for Problem (AP), optimal solutions for Problem (P) and saddle points for Problem (P).

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