

Problems of functional extrema

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Since the school program does not cover the subject of derivative as a way to find functional extrema, I discuss the problem of finding functional extrema without using derivative. Instead, I explain the use of Elementary Methods (EM).

1. Finding extrema of a quadratic function and those other functions that can be turned into quadratic ones.
2. Finding functional extrema using inequality, as in $G \leq A$, where G is the geometric mean and A is the arithmetic mean.
3. Finding functional extrema using trigonometric substitution.
4. Finding functional extrema by means of determining the codomain (Cod F) of the function.

Included are examples of problems from mathematics Olympiads.

The work is helpful to those students who seek deeper understanding of mathematics at the school level, as well as those who are preparing themselves for Olympiads.