# On a functional inequality of Alzer and Salinas

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**Abstract**

The results of the talk are motivated by a paper by Alzer and Salinas [1]. They study the following functional inequality:

$$f(x)f(y) - f(xy) \leq f(x) + f(y) - f(x+y) \tag{1}$$

for mapping $f\colon \mathbb{R} \to \mathbb{R}$. The main theorem of [1] says that if $f$ is differentiable at zero and convex or concave, then, either $f$ is constant or it is equal to the identity mapping. An open problem to determine all solutions of (1) under more flexible assumptions was formulated in [1]. During the talk, we will make an approach to answer it and we will present two results on inequality (1).

Results of the talk are based on paper [2].

## References

[1] ALZER, H., SALINAS L., On the functional inequality $f(x)f(y) - f(xy) \leq f(x) + f(y) - f(x+y)$, *Comp. Methods and Funct. Theory* **20**: 623–627, 2020.

[2] FECHNER, W., On a functional inequality of Alzer and Salinas, *Comp. Methods and Funct. Theory* **(accepted)**.

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