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# CONDITIONS FOR NON-NEGATIVITY OF QUADRATIC FUNCTIONS

A real function $f$ is called quadratic if it fulfils the functional equation

$$f(x+y)+f(x-y)=2f(x)+2f(y)$$

for every real numbers $x$ and $y$. Assuming that $f$ is quadratic and $f$ is non-negative on a Lebesgue measurable set with positive Lebesgue measure, we establish that $f$ has to be non-negative everywhere.

This research is motivated by a representation theorem for non-negative quadratic functions [1] as well as by analogous conditions for the continuity of the solutions of monomial or polynomial functional equations [2]. We note, however, that our methods are completely different. Moreover, our condition does not imply the measurability of $f$.

## References

[1] Gy. Maksa, *A remark on symmetric biadditive functions having nonnegative diagonalization,* Glas. Mat. Ser. III **15**(**35**)/2 (1980), 279–282.

[2] L. Székelyhidi, *Regularity properties of polynomials on groups,* Acta Math. Hung. **45**(1-2) (1985), 15–19.

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