Letter to Editors

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A result of my paper titled “On Trigonometric Series and Primitive Functions” (see [1]) states that any finite, measurable function $f(x)$ given in $T = (0, 2\pi)$ possesses a uniformly smooth, primitive $F(x)$, i.e. F is continuous,

$$F'(x) = f(x)$$

almost everywhere and

$$\omega_2(h; F) \equiv \sup_{|t| \leq h, x \in T} |F(x+t) + F(x-t) - 2F(x)| = o(h),$$

as $h \rightarrow 0$.

Recently, I knew that on the base of some different ideas V. G. Krotov [2] have proved a stronger result. Namely, his primitive F satisfies the condition

$$\omega_2(h; F) = O(h\sigma(h)), \quad h \rightarrow 0.$$

where $\sigma(h)$ is any given, positive, increasing function satisfying the conditions

$$\int_0^1 \frac{\sigma^2(h)}{h} dh = \infty;$$

and

$$\sigma(16h) \leq 2\sigma(h).$$

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