1133-41-203 **Alexander V Tovstolis*** (oleksandr.tovstolis@ucf.edu), Department of Mathematics, University of Central Florida, 4393 Andromeda Loop N, Orlando, FL 32816, and **Xin Li** (xin.li@ucf.edu), Department of Mathematics, University of Central Florida, 4393 Andromeda Loop N, Orlando, FL 32816. *Approximation of Smooth Functions on* $[1,\infty)$ *and* $\mathbb{R}\setminus(-1,1)$ *by Entire Functions of Exponential Type.*

In 1946, S. M. Nikolskĭi discovered an effect of better pointwise approximation of a smooth function by algebraic polynomials. Namely, for a function from Sobolev class $W^1[-1,1]$, there is a sequence of algebraic polynomials $\{p_n\}_{n=0}^{\infty}$, $p_n \in \mathbb{R}_n[x]$, s.t.

$$|f(x)-p_n(x)| \leq \frac{\pi}{2}\frac{\sqrt{1-x^2}}{n+1} + O\left(\frac{\ln(n+2)}{(n+1)^2}\right).$$

The constant $\pi/2$ in the first term cannot be improved.

There are several generalizations of this result due to A. F. Timan, I. E. Gopengauz, S. A. Teljakovskiĭ, R. M. Trigub, and others. We focus on pointwise approximation of a function from the Sobolev class $W^{r,\infty}(\mathbb{R}\setminus(-1,1))$ by entire functions of exponential type at most σ.

Known estimates of such approximation is due to Ju. A. Brudnyĭ (1953). However, the Brudnyĭ's result is not valid as stated. We found a fix. As in the Trigub's article, we deduce our estimates from the corresponding sharp result on the uniform approximation. In our case, this is the Akhiezer's theorem on uniform approximation. Some useful trick from the Ju. A. Brudnyĭ's proof also plays an important role. (Received July 25, 2017)