**Nikolskii-type estimate for nearly copositive approximation of continuous on an interval functions**

G.A.Dzyubenko

*Institute of Mathematics NAS of Ukraine*

If a continuous on a closed interval function $f$ changes its sign at $s$ points $y_i : -1 < y_s < y_{s-1} < ... < y_1 < 1$, then for each $n \in \mathbb{N}$, greater then some constant $N(k, y_i)$ depending only on $k \in \mathbb{N}$ and $\min\limits_{i=1,...,s-1}\{y_i - y_{i+1}\}$, we construct an algebraic polynomial $P_n$ of degree $\le n$ such that: $P_n$ has the same sign as $f$, everywhere except, perhaps, small neighborhoods of the $y_i$ :

$$(y_i - \rho_n(y_i), y_i + \rho_n(y_i)), \quad \rho_n(x) := 1/n^2 + \sqrt{1 - x^2}/n,$$

$P_n(y_i) = 0$ and

$$|f(x) - P_n(x)| \le c(k, s)\, \omega_k(f, \rho_n(x)), \quad x \in [-1, 1],$$

where $c(k, s)$ is a constant depending only on $k$ and $s$, and $\omega_k(f, \cdot)$ is the modulus of continuity of the $k$-th order of the function $f$.