Approximation of a function and its derivatives by entire functions
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Abstract. A simple proof is given for the fact that, for $m$ a non-negative integer, a function $f \in C^{(m)}(\mathbb{R})$, and an arbitrary positive continuous function $\epsilon$, there is an entire function $g$, such that $|g^{(i)}(x) - f^{(i)}(x)| < \epsilon(x)$, for all $x \in \mathbb{R}$ and for each $i = 0, 1 \ldots, m$. We also consider the situation, where $\mathbb{R}$ is replaced by an open interval.