Theorem

Suppose f has k continuous derivatives on $[a,b]$ and let p_n be the n^{th} order Chebyshev interpolant. Then there is a $C>0$, not depending on n, such that

$$|f(x)-p_n(x)| \leq Cn^{-k}$$

for all $x \in [a,b]$.

n^{-1}

n^{-2}

n^{-3}