A Note on Two Point Taylor Expansion

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Abstract. Let f be a piecewise polynomial continuous function such that f is a polynomial p on the interval $[o,\infty)$ and f is a polynomial q on the interval $(-\infty,0]$. Then, we show that f is expressed as the two point Taylor expansion about $-1,1$ on the interval $(-\sqrt{2},\sqrt{2})$. In this work, we are concerned with showing functions which are non analytic but belong to the set of all functions to have m point Taylor expansion on interval $T_m(I)$. Furthermore, if $\lim_{n\to\infty} p_n(x) = f(x)$, for all $x \in (-\sqrt{2},0)\cup(0, \sqrt{2})$ and if $p(0) = q(0)$, then f has two point Taylor expansion about $-1,1$ on $(-\sqrt{2},\sqrt{2})$ implying $\lim_{n\to\infty} p_n(x) = f(x) \forall x \in (-\sqrt{2},\sqrt{2})$.