EXAMPLE : The first four Taylor Polynomials for $f(x) = e^x$ are

$P_0(x; 0) = 1$,

$P_1(x; 0) = 1 + x$,

$P_2(x; 0) = 1 + x + \dfrac{x^2}{2!}$,

$P_3(x; 0) = 1 + x + \dfrac{x^2}{2!} + \dfrac{x^3}{3!}$, $\cdots$

All are plotted on the same graph below.