

IF  $f(x) = e^x$

IS INTERPOLATED BY  $P_3(x) = a_0 + a_1x + a_2x^2 + \dots$

AT  $x = \{x_0 = 0, x_1 = 1, \dots + a_3x^3$

$x_2 = 2, x_3 = 3\}$

THE MAXIMUM ERROR W/IN THE INTERPOLATED  $x$ ,

$$\|f - P_3\| = \max_{0 \leq x \leq 3} |f(x) - P_3(x)|$$

IS THE SAME AS,

$$\max_{0 \leq x \leq 3} \left| \frac{f^{(n+1)}(\xi)}{(n+1)!} (x-x_0)(x-x_1)(x-x_2)(x-x_3) \right|$$

WHY  $(n+1)!$ ?

WHICH IS

$$\max_{0 \leq x \leq 3} \left| \frac{d^4}{dx^4} [e^x] \frac{1}{4!} \cdot x(x-1)(x-2)(x-3) \right|$$

WHICH IS ALSO NEARLY THE SAME AS THE VALUE

0.83688117\*

... SO REGARDLESS OF  $a_n$ , THE MAX ERROR IS WHAT IT IS FOR THE ASSOCIATED DEGREE?

\* COMPUTED NUMERICALLY