3

c EVAL $e^{1.5}$, e^4 W/ THE INTERPOLATING POLY. NEWTON

NOTE, $e^{1.5} \approx \alpha$ IS INTERPOLATED

WHILE, $e^4 \approx \beta$ IS EXTRAPOLATED

$|x-\alpha| > |x-\beta|$?

$f(x) = e^x$, $x_0 = 0$, $x_1 = 1$, $x_2 = 2$, $x_3 = 4$

$$e^x \approx 1 + (e-1)[x + e(x-1)] + \cdots$$

$$\cdots + \frac{e^2}{2}(e^2-1)(x-2)$$

$$e^{1.5} \approx 1 + (e-1)[1.5 + e(1.5-1)] + \cdots$$

$$\cdots + \frac{e^2}{2}(e^2-1)(1.5-2)$$

$$\approx 1 + (e-1)[2.85914] + \cdots$$

$$\cdots + \frac{e^2}{2}(6.38906)(-0.5)$$

$$\approx -5.88947 = \text{alpha}$$

THERE IS NO REASON FOR THIS TO BE NEGATIVE, I EITHER BUILT NEWTONS $P_3(x)$ WRONG, OR MADE A CALC. ERROR

20-26 LECTURES