

3
b

NEWT FORM
OF INT POLY

$$P_n(x) = f[x_0] + f[x_0, x_1](x-x_0) + \dots$$

$$\dots + f[x_0, x_1, x_2](x-x_0)(x-x_1) + \dots$$

$$\dots + f[x_0, x_1, \dots, x_n](x-x_0)(x-x_1)\dots(x-x_{n-1})$$

$$\rightarrow P_3(x) = f[x_0] + f[x_0, x_1](x-x_0) + \dots$$

$$\dots + f[x_0, x_1, x_2](x-x_0)(x-x_1) + \dots$$

$$\dots + f[x_0, x_1, x_2, x_3](x-x_0)(x-x_1)(x-x_2)$$

x_i	$f[x_i]$	$f[x_0, \dots, x_i]$	$f[x_0, \dots, x_i]$	$f[x_0, \dots, x_i]$
0	1	$\frac{e^0-1}{0-1}$	$\left(\frac{e^2-e}{2-1}\right) - \left(\frac{e-1}{1-0}\right)$	$1 - 1$
1	e^1	$\frac{e^2-e}{2-1}$	$\left(\frac{e^4-e^2}{4-2}\right) - \left(\frac{e^2-e}{2-1}\right)$	$4 - 2$
2	e^4	$\frac{e^4-e^2}{4-2}$		
4	e^4			

1.000000	1.718282	2.952492
2.718282	4.670774	
7.389056	23.60455	9.466888
54.59815		

$$\leq 1.628599$$