INTERPOLATION

$p_0 = (y_0 = \ldots$ NO

$\rightarrow p_3 = y_1 l_1(t) + y_2 l_2(t) + \cdots$

$\cdots + y_3 l_3(t) + y_4 l_4(t)$

$\rightarrow y_4 = e^0 = 1$

$$l_4(t) = \frac{\prod_{k=1,\,k\neq j}^{4} (t - t_k)}{\prod_{k=1,\,k\neq j}^{4} (t_j - t_k)}$$

$j=2 \quad k=1 \quad \ldots$

$j = 1, \ldots, n$

$= 1, 2, 3, 4$

$l_4(t) = (t - t_1)\cdot(t - t_2)\cdot(t - t_3)\cdot(t - t_4)$

NO.... WRONG...

$(t_1, y_1) = (0, 1)$

$(t_2, y_2) = (1, e)$

$(t_3, y_3) = (2, e^2)$

$(t_4, y_4) = (3, e^3)$

$n = 1$

$p_{n-1} = p_0 = y_0 l_0(t)$

$$l_0(t) = \frac{\prod_{k=1,\,k\neq j}^{0} (t - t_1)}{\prod_{k=1,\,k\neq j}^{0} (t_0 - t_1)}$$

$, j = 1, \ldots, n$

USING THE LAGRANGE BASIS, THE POLYNOMIAL INTERPOLATING THE DATA POINTS, (t_i, y_i) ARE GIVEN BY.

$\boxed{p_{n-1}(t) = y_n l_n(t)}$

POLYNOMIAL INTERPOLATION

$$l_j(t) = \frac{\prod_{k=1,\,k\neq j}^{n} (t - t_k)}{\prod_{k=1,\,k\neq j}^{n} (t_j - t_k)}$$

$p_{n-1}(t) = y_1 l_1(t) + y_2 l_2(t) + \cdots + y_n l_n(t)$