

3  $f(x) = e^x$

$\{x_0, x_1, x_2, x_3\} = \{0, 1, 2, 3\}$

a) WRITE THE INTERPOLATING POLYNOMIAL IN LAGRANGE FORM

$P_n(x) = \sum_{k=0}^n f(x_k) \cdot L_k(x) = \sum_{k=0}^3 e^{x_k} \cdot L_k(x) = P_3(x)$

$\left\{ f(x) = e^x, n = 3, L_k(x) = \prod_{\substack{i=0 \\ i \neq k}}^n \frac{x-x_i}{x_k-x_i}, k=1 \dots n \right\}$

$P_3(x) = e^{x_0} \cdot L_0(x) + e^{x_1} \cdot L_1(x) + e^{x_2} \cdot L_2(x) + \dots + e^{x_3} \cdot L_3(x)$

$P_3(x) = e^0 \cdot \left[ \prod_{\substack{i=1 \\ i \neq 0}}^3 \frac{x-x_i}{x_0-x_i} \right] + e^1 \cdot \left[ \prod_{\substack{i=0 \\ i \neq 1}}^3 \frac{x-x_i}{x_1-x_i} \right] + e^2 \cdot \left[ \prod_{\substack{i=0 \\ i \neq 2}}^3 \frac{x-x_i}{x_2-x_i} \right] + \dots + e^3 \cdot \left[ \prod_{\substack{i=0 \\ i \neq 3}}^3 \frac{x-x_i}{x_3-x_i} \right]$

BELIEVE THE NEXT STEP  
WILL  
HELP

YOUR DEGREE IS  
AT RISK

AT THIS PT  
ITS MOST IMP.  
YOU GET FAM.  
W/ THE SUBJ.  
BY POSTING SOLVES

1	$\frac{e^x}{1+e^x}$
2	(2)
3	✓
4	(4)
5	(5)
6	(6)
7	(7)
8	(8)
9	19/10
10	COND. CONV.
11	COND.
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