Corrections to Interpolation Notes

1/. Page 8: Generalisation to n-degree polynomial

$$\boxed{L_i(x) = \frac{(x-x_0)\cdots(x-x_{i-1})(x-x_{i+1})\cdots(x-x_n)}{(x_i-x_0)\cdots(x_i-x_{i-1})(x_i-x_{i+1})\cdots(x_i-x_n)}}$$

2/. Page 9: $\boxed{f[x_0, x_1] \simeq f'\left(\frac{x_0+x_1}{2}\right)}$ (Near the bottom of the page)

3/. Page 11: General n-order Divided Difference

$$\boxed{f[x_0, x_1, \ldots, x_n] = \frac{f[x_1, x_2, \ldots, x_n] - f[x_0, x_1, \ldots, x_{n-1}]}{x_n - x_0}}$$

4/. Page 17: $f[x_j, x_{j+1}, x_{j+2}, x_{j+3}] = \dfrac{f[x_{j+1}, x_{j+2}, x_{j+3}] - f[x_j, x_{j+1}, x_{j+2}]}{x_{j+3} - x_j}$

Formula at the bottom of the page. All j, j+1, j+2, etc. are subscripts of x. $\boxed{x_{j+3} \text{ NOT } x_j+3}$

5/. Page 18: All j, j+1, j+2, etc. are in subscripts.

6/. Page 19: $P_n(x) = f(x_0) + \mu\Delta f_0 + \mu(\mu-1)\frac{\Delta^2 f_0}{2!} + \cdots$

This term has been left out in the formula.

7/. Page 25: For the interval $[x_{j-1}, x_j]$, $S'(x_j)$ must be equal to the value of $S'(x_j)$ in $[x_j, x_{j+1}]$ for smooth matching. (Bottom of the page).

Additional Discussions

1/. Linear Polynomial: $\boxed{f(x) = a_1x + a_0}$. Two unknowns a_0 and a_1.

Hence two points are needed.

2/. Quadratic Polynomial: $\boxed{f(x) = a_2x^2 + a_1x + a_0}$ Three unknowns a_0, a_1, a_2

Hence three coordinates are needed. In general for an n-order polynomial, n+1 coordinates are needed.