D 2.4.4 cont.

$$= y^n + h \sum_{k=0}^{N} (-1)^k f^{n-k} \sum_{j=k}^{N} \binom{j}{k} b_j$$

I.e. $$\tilde{b}_k^N = (-1)^k \sum_{j=k}^{N} \binom{j}{k} b_j$$

$$\boxed{\begin{array}{l} \tilde{b}_N^N = (-1)^N b_N \qquad \tilde{b}_k^N = 0 \qquad k > N \\ \tilde{b}_k^{N+1} = (-1)^k \binom{N+1}{k} b_{N+1} + \tilde{b}_k^N . \end{array}}$$

To compute a few

$\tilde{a}_0^0 = a_0 = 1$

$\tilde{a}_0^1 = \tilde{a}_0^0 + \binom{1}{0} a_1 = 1 + (-\frac{1}{2}) = 1/2$

$\tilde{a}_0^2 = \tilde{a}_0^1 + \binom{2}{0} a_2 = 1/2 + (-\frac{1}{12}) = 5/12$

$\tilde{a}_0^3 = \tilde{a}_0^2 + \binom{3}{0} a_3 = 5/12 + (-\frac{1}{24}) = 9/24$

$\tilde{a}_1^1 = -a_1 = 1/2$

$\tilde{a}_1^2 = \tilde{a}_1^1 - \binom{2}{1} a_2$

$= 1/2 - 2(-\frac{1}{12}) = 8/12$

$\tilde{a}_2^2 = a_2 = -1/12$

These check w/ TABLE 2.4.2

For the $\tilde{b}$'s,

$\tilde{b}_0^0 = b_0 = 1$

$\tilde{b}_0^1 = \tilde{b}_0^0 + \binom{1}{0} b_1 = 1 + 1/2 = 3/2$

$\tilde{b}_0^2 = \tilde{b}_0^1 + \binom{2}{0} b_2 = 3/2 + \frac{5}{12} = 23/12$

$\tilde{b}_1^1 = -b_1 = -1/2$

$\tilde{b}_1^2 = \tilde{b}_1^1 - \binom{2}{1} b_2$

$= -1/2 - 2 \cdot 5/12$

$= -16/12$

These check w/ Table 2.4.3 .