Let

$$k(n) = 2^{n+1} - 3$$
 and  $p_N(z) = z + \sum_{k=0}^{N} b_k z^{-k}$ .

Suppose we know the constants  $b_0, b_1, \dots, b_{j-1}$ . We also have the recursion relation

$$A_n(z) = (A_{n-1}(z))^2 + z.$$

We know that for a given n, that the coefficient of  $z^{2^n-j-1}$  is zero for  $j \le k(n)$ . Suppose we know  $b_0, b_1, \ldots, b_{j-1}$ . Then examining  $A_n(p_j(z))$  allows us to compute  $b_j$ . For example, since k(1) = 1, we can look at

$$A_1(p_1(z)) = z^2 + (2b_0 + 1)z + (2b_1 + b_0^2 + b_0)z^0 + (2b_0 + b_1)z^{-1} + b_1^2z^{-2},$$

where we know that

$$2b_0 + 1 = 0$$
 and  $2b_1 + b_0^2 + b_0 = 0$ ,

which gives  $b_0 = -1/2$  and  $b_1 = 1/8$ .