Structural or analytic derivation

The calculation is exact Taylor translation expressed as a weighted convolution. It unifies the first-order jet method with coefficient extraction of every order. Since A is a polynomial of degree below n, the circle sampling in part (b) has no aliasing; an arbitrary analytic function would additionally require a tail bound.

Comparative cost and preferred method

Repeated symbolic differentiation followed by evaluation or a triangular Taylor-shift table uses $\Theta(n^2)$ coefficient operations. The convolution method uses $O(n \log n)$ and $O(n)$ coefficient storage. It is the efficient method already developed by the source problem. Factorials and high derivatives can be ill-conditioned or overflow in floating arithmetic; the operation bound is over exact or suitably controlled coefficient arithmetic, not a blanket stability theorem.