The source already requests generating functions; the standard method is therefore the same structural calculus used in the PHI synopsis. Rational simplification has fixed symbolic cost for these fixed-degree expressions. Extracting the first $N$ coefficients by the resulting fixed-order recurrence takes $O(N)$ coefficient arithmetic and matches the $\Omega(N)$ output-count lower bound. Exact growing integers require their actual bit lengths; no constant-time claim is made for large-index integer output.