The identities $z/(z-a) = \sum_{n\geq 0} a^n z^{-n}$ for $|z| > |a|$ and $z/(z-a) = -\sum_{n\leq -1} a^n z^{-n}$ for $|z| < |a|$ follow by geometric summation, proving the table and every support endpoint.

## Structural or analytic derivation

The complete residue calculation, including the origin contribution for negative indices and all three annular regions, is given in SC-017. It verifies the same inverse table independently of the partial-fraction method requested here.

## Comparative cost and preferred method

The source explicitly asks for partial fractions, so the two-coefficient decomposition is retained as the preferred calculation. Residues provide an independent coefficient proof. Both have fixed symbolic setup and identical evaluation complexity; no speedup is attributed merely to a change of terminology.