Theorem 1 (Residue Theorem) Let f be analytic in the region G except for the isolated singularities $a_1, a_2, \ldots, a_m$. If γ is a closed rectifiable curve in G which does not pass through any of the points a_k and if $\gamma \approx 0$ in G then

$$\frac{1}{2\pi i} \int_\gamma f = \sum_{k=1}^m n(\gamma; a_k) \operatorname{Res}(f; a_k).$$