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

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