Theorem: If an analytic function takes its maximum value at a point not on the boundary of a region, then it is constant.

Power Series: Let f be analytic at a point $p \in \Omega$.

Then
$$f(z) = \sum_{n=0}^{\infty} (z-p)^n f^{(n)}(p).$$

Laurent Series: Let f be analytic and 1-1 in $\Omega - \{p\}$

with a simple pole at p. Then
$$f(z) = A_{-1}/(z-p) + \sum_{n=0}^{\infty} (z-p)^n A_n.$$