



Math for the people, by the people.

pole

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Defines	simple

Let $U \subset \mathbb{C}$ be a domain and let $a \in \mathbb{C}$. A function $f: U \rightarrow \mathbb{C}$ has a *pole* at a if it can be represented by a Laurent series centered about a with only finitely many terms of negative exponent; that is,

$$f(z) = \sum_{k=-n}^{\infty} c_k(z-a)^k$$

in some nonempty deleted neighborhood of a , with $c_{-n} \neq 0$, for some $n \in \mathbb{N}$. The number n is called the *order* of the pole. A *simple pole* is a pole of order 1.