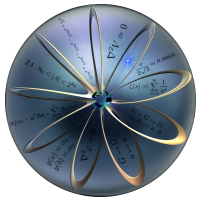

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Riemann's removable singularity theorem

Canonical name	RiemannsRemovableSingularityTheorem
Date of creation	2013-03-22 13:33:00
Last modified on	2013-03-22 13:33:00
Owner	pbruin (1001)
Last modified by	pbruin (1001)
Numerical id	4
Author	pbruin (1001)
Entry type	Theorem
Classification	msc 30D30
Related topic	Pole
Related topic	EssentialSingularity
Related topic	Meromorphic
Related topic	RiemannsTheoremOnIsolatedSingularities

Let $U \subset \mathbb{C}$ be a domain, $a \in U$, and let $f : U \setminus \{a\}$ be holomorphic. Then a is a removable singularity of f if and only if

$$\lim_{z \to a}(z - a)f(z) = 0.$$

In particular, a is a removable singularity of f if f is `http://planetmath.org/node/Boundedbou` near a, i.e. if there is a punctured neighborhood V of a and a real number $M > 0$ such that $|f(z)| < M$ for all $z \in V$.