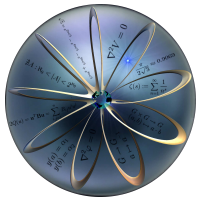

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meromorphic functions of several variables

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Defines	indeterminancy set

Definition. Let $\Omega \subset \mathbb{C}^n$ be a domain and let $h\colon \Omega \to \mathbb{C}$ be a function. h is called if for each $p \in \Omega$ there exists a neighbourhood $U \subset \Omega$ ($p \in U$) and two `http://planetmath.org/HolomorphicFunctionsOfSeveralVariables`holomorphic functions f, g defined in U where g is not identically zero, such that $h = f/g$ outside the set where $g = 0$.

Note that h is really defined only outside of a complex analytic subvariety. Unlike in one variable, we cannot simply define h to be equal to ∞ at the poles and expect h to be a continuous mapping to some larger space (the Riemann sphere in the case of one variable). The simplest counterexample in $\mathbb{C}^2$ is $(z, w) \mapsto z/w$, which does not have a unique limit at the origin. The set of points where there is no unique limit, is called the *indeterminancy set*. That is, the set of points where if $h = f/g$, and f and g have no common factors, then the indeterminancy set of h is the set where $f = g = 0$.

References

[1] Lars Hörmander. , North-Holland Publishing Company, New York, New York, 1973.

[2] Steven G. Krantz. , AMS Chelsea Publishing, Providence, Rhode Island, 1992.