f

0

$\Omega \subset \mathbb{C}$

$\{f = 0\}$

Ω

f, g

Ω

$f = g$

in

Ω

$f = g$

f, g

$\Omega \supset$

R

$f \equiv g$

R

$f \equiv g$

Ω

$a \in \Omega$

f

g

Ω

$f(z) = (z - a)^n g(z)$

$g(a) \neq 0$

a

$a \in \mathbb{C}$

$r > 0$

f

$\Omega \backslash \{a\}$

$a \in \Omega$

$\overline{D_r(a)} \subset \Omega$

a

isolated singularity

a

removable singularity

f

$D_\rho(a) \backslash \{a\}$

$\rho \in (0, r)$

pole

$\lim\limits_{z \to a} f(z) = \infty$

essential singularity

$\lim\limits_{z \to a} f(z) = \infty$

$M > 0$

$r > 0$

$f(z) > M$

$z \in D_r(a) \backslash \{a\}$

a

$f(a) = \infty$

f

$\mathbb{C}_\infty$

a

f

$n \in \mathbb{N}$