M.Sc. Sem II

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Analytic functions A Single valued function $f(z)$ defined in a domain D, which is differentiable at all points of D called an analytic function of z in that domain. An Analytic function is also called an holomorphic function.

(a) A function $f(z)$ is said to be regular at a point z_0, if $f(z)$ is analytic in the deleted neighbourhood of z_0 and can be made analytic also at z_0 by defining $f(z)$ at $z = z_0$

(b) A function which is analytic everywhere in the complex plane is known as an entire function. Since derivative of a Polynomial exists at every point.

(c) The point at which $f(z)$ fails to be

analytic is called a Singular point of the function $f(z)$

Properties of Analytic function

If $f(z)$ and $g(z)$ are two analytic functions in a domain D, then

(i.) $f(z) \pm g(z)$

(ii.) $f(z) \cdot g(z)$

(iii.) $\frac{f(z)}{g(z)}$ $(g(z) \neq 0)$

(iv.) $K(z)$ (K is any constant) are also analytic in D.