

## Point at Infinity:

In complex variable theory, infinity is regarded as a single point, and behaviour in its neighbourhood is discussed after making a change of variable from  $z$  to  $w = \frac{1}{z}$ . This transformation has the effect that, for example,  $z = -R$ , with  $R$  large, lies in the  $w$ -plane close to  $z = +R$ , thereby among other things influencing the values computed for derivatives. An elementary consequence is that entire functions, such as  $z$  or  $e^z$ , have singular points at  $z = \infty$ . As a trivial example, note that at infinity, the behaviour of  $z$  is identified as that of  $\frac{1}{w}$  as  $w \rightarrow 0$ , leading to the conclusion that  $z$  is singular there.