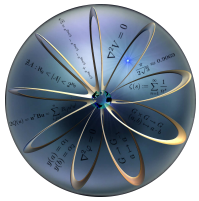

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fundamental theorem of algebra

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Theorem. *Let $f \in \mathbb{C}[Z]$ be a non-constant polynomial. Then there is a $z \in \mathbb{C}$ with $f(z) = 0$.*

In other , $\mathbb{C}$ is algebraically closed.

As a corollary, a non-constant polynomial in $\mathbb{C}[Z]$ factors completely into linear factors.