# Landau's constant



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We suggest that the reader reads first the entry on Bloch's constant. Let $\mathcal{F}$ be the set of all functions $f$ holomorphic on a region containing the closure of the disk $D = \{z \in \mathbb{C} : |z| < 1\}$ and satisfying $f(0) = 0$ and $f'(0) = 1$. For each $f \in \mathcal{F}$ let $\lambda(f)$ be the supremum of all numbers $r$ such that there is a disk $S \subset D$ such that $f(S)$ contains a disk of radius $r$ (notice that here we don't require $f$ to be injective on $S$).

**Definition.** *Landau's constant $L$ is defined by*

$$L = \inf\{\lambda(f) : f \in \mathcal{F}\}.$$

Let $B$ be Bloch's constant. Then, clearly, $L \geq B$. The exact value of $L$ (as that of $B$) is not known but it has been shown that $0.5 \leq L \leq 0.56$. In particular, it is known that $L$ is strictly greater than $B$.

# References


[1] John B. Conway, *Functions of One Complex Variable I*, Second Edition, 1978, Springer-Verlag, New York.