



COMPLEX VARIABLES
SPRING 2011

ASSIGNMENT 10.1
DUE NOVEMBER 7

Exercise 1. Suppose that f is entire and $\lim_{z \rightarrow \infty} \frac{f(z)}{z} = 0$. Prove that f is constant.

Exercise 2. Show that if f is entire and $\lim_{z \rightarrow \infty} f(z) = \infty$ then f is surjective.

Exercise 3. Let $A \subseteq \mathbb{C}$ be a simply connected open set and $f : A \rightarrow \mathbb{C}$ a continuous function. Show that f is analytic if and only if f has an antiderivative.

Exercise 4. Let $A \subseteq \mathbb{C}$ be a connected open set and let f be an analytic function on A . Prove that if f is nonconstant and nonzero on A then $|f|$ cannot attain a global minimum on A .