Complex Analysis: Homework 14

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Problem 2. (page 227)
Show that the functions z^n, n a nonnegative integer, form a normal family in $|z| < 1$, also in $|z| > 1$, but not in any region that contains a point on the unit circle.

Proof.

$\square$

Problem 3. (page 227)
If $f(z)$ is analytic in the whole plane, show that the family formed by all functions $f(kz)$ with constant k is normal in the annulus $r_1 < |z| < r_2$ if and only if f is a polynomial.

Proof.

$\square$

Problem 1. (page 232)
If z_0 is real and Ω is symmetric with respect to the real axis, prove (by the uniqueness) that f satisfies with the symmetry relation $f(\bar{z}) = \overline{f(z)}$

Proof.

$\square$

Problem 2. (page 232)
What is the corresponding conclusion if Ω is symmetric with respect to the point z_0?

Proof.

$\square$