Fractual iterations of functions.

10 августа 2011 г.

9. Complex dynamics

For home thinking

Let $f(0) = 0$, $f'(0) = k \neq 0$. When $f(x)$ is conjugated with $k \cdot x$ in some neighborhood of zero?

1. Let f analytic function and $|k| \neq 1$. Then there exist analytic function G such that $f(x) = G(kG^{(-1)}(x))$. Let $k^{2011} = 1$. Give an example of such function which is not conjugate to linear one.

2. Let k is not a root of unity. Then f is conjugated to linear one as a formal power series.

3. Prove that this series can be divergent.

4. Prove that for some k such that $|k| = 1$ this power series must converge.