A UNIFORM BOUND ON COMMON PREPERIODIC POINTS FOR QUADRATIC POLYNOMIALS

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Abstract. In this article, we prove the existence of a uniform bound on the number of preperiodic points that can be shared by two quadratic polynomials $f_1(z) = z^2 + c_1$ and $f_2(z) = z^2 + c_2$, over all pairs $c_1 \neq c_2$ in $\mathbb{C}$. We reduce the problem to the case of $c_1 \neq c_2 \in \overline{\mathbb{Q}}$, and we employ a general method introduced in our article [DKY] to control the number of common zeroes of two distinct height functions on $\mathbb{P}^1(\overline{\mathbb{Q}})$. The proofs differ from those of [DKY], in that here we use results from classical function theory and complex dynamics to obtain our desired estimates at the archimedean places of a number field.

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