

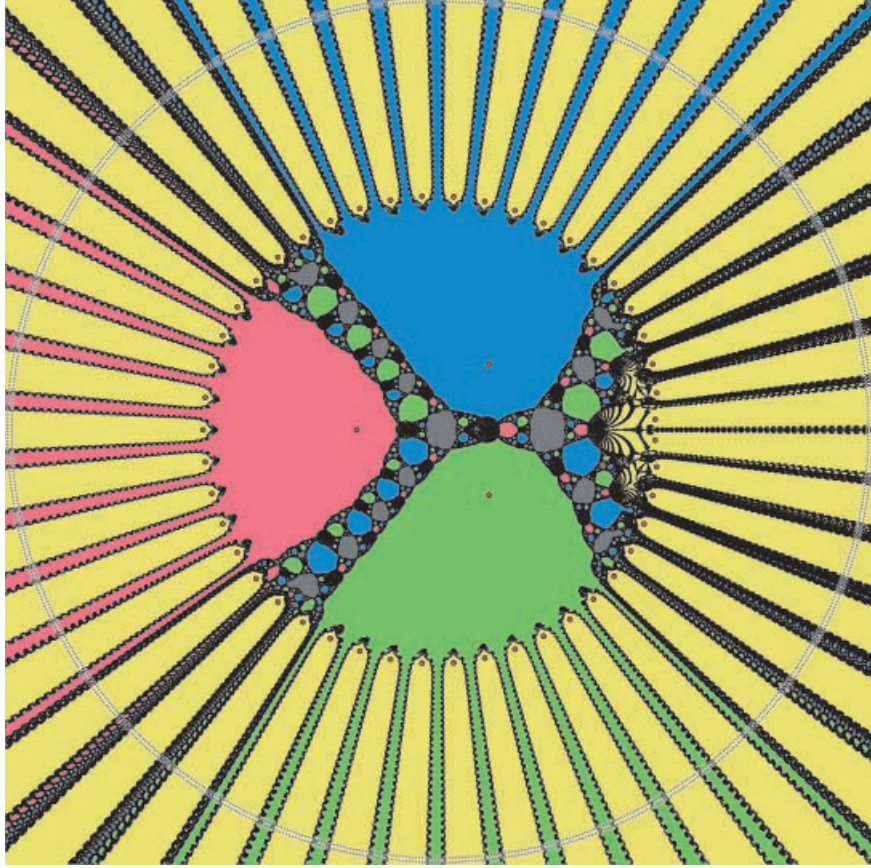
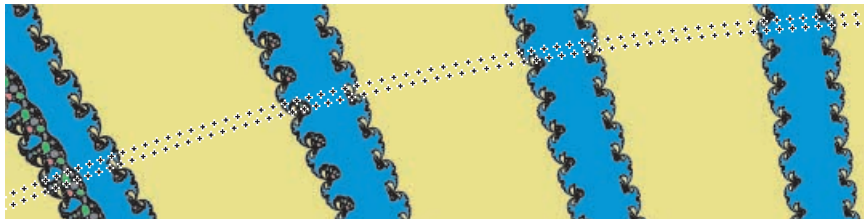


Fig. 2 A set of starting points as specified by our theorem for degree 50, indicated by small crosses distributed on two large circles. Also shown is the Julia set for the Newton map of the degree 50 polynomial $z^{50} + 8z^5 - \frac{80}{3}z^4 + 20z^3 - 2z + 1$ (black). There are 47 roots near the unit circle, and 3 roots well inside, all marked by *red disks*. As in Fig. 1, there is an attracting periodic orbit (*basin in grey*). A close-up is shown below



An appropriate affine coordinate change will bring all the roots into the unit disk. Such coordinate changes do not alter the dynamics of Newton's method: the Newton map for $p(az + b)$ is conjugate to that for $p(z)$. Moreover, there is a precise classical criterion based on continued fractions to determine whether or not all the roots of a given polynomial are in the unit