

Newton-Raphson

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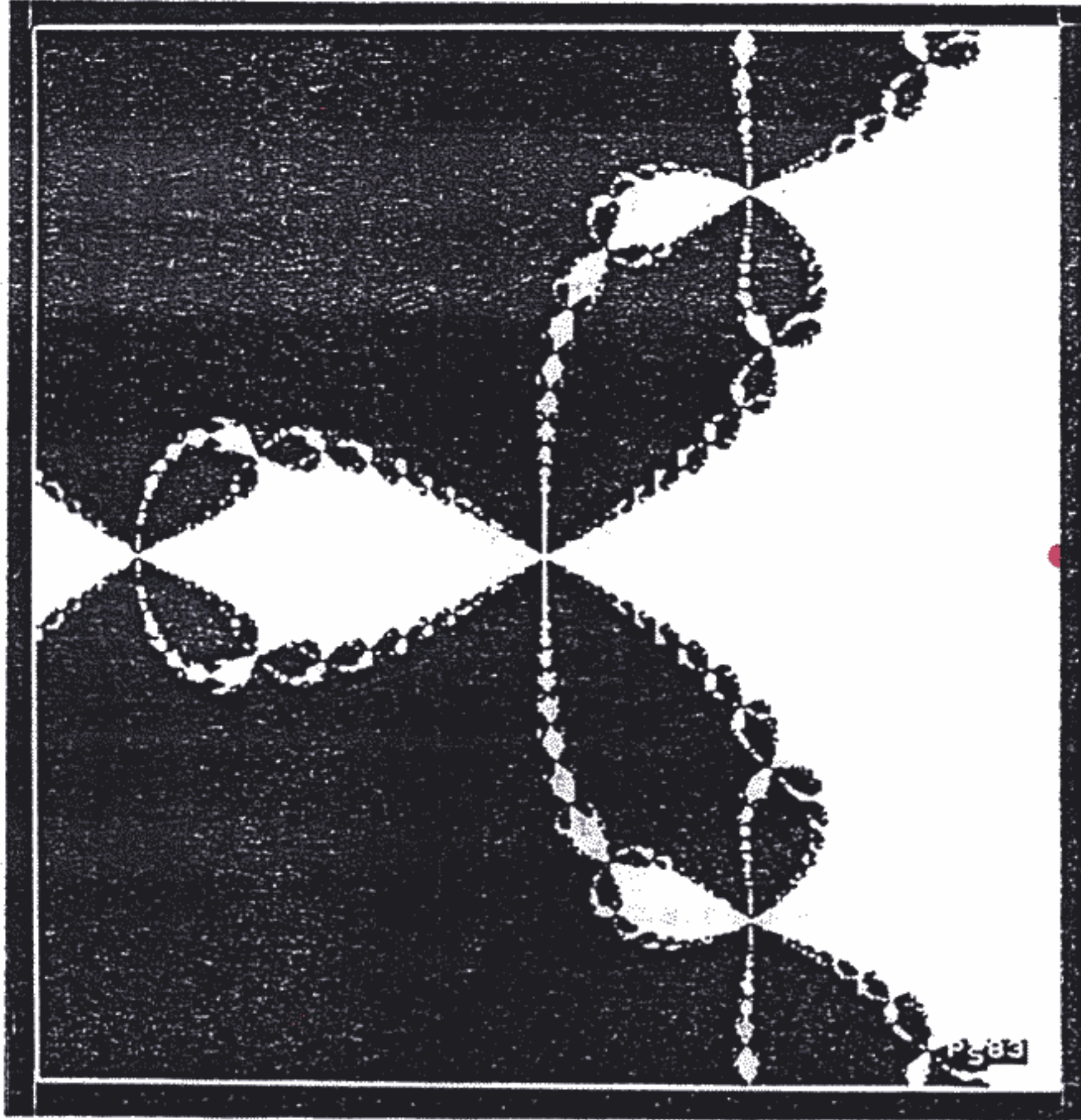
für $z^3 = 1$ 

Figure 1: Spatial pattern of the town RGB. The customers of shop R are shown in white

Cayley's Problem

In 1879 A.Cayley /Ca1/ suggests the extension of what he calls the Newton-Fourier Method

$$N(z_k) := z_{k+1} = z_k - p(z_k)/p'(z_k) \quad (1)$$

to complex roots of a polynomial p : "... In connexion herewith, throwing aside the restrictions as to reality, we have what I call the Newton-Fourier Imaginary Problem...". Furthermore, he suggests to study the problem globally: "... The problem is to determine the regions of the plane, such that P (initial point) being taken at pleasure anywhere within one region we arrive ultimately at the point A (a root of the problem) ...". In two notes published in 1879 /Ca2/ and 1890 /Ca3/ he takes up the problem