

Needham, Chapter 7, p. 365

Try using a computer to animate the evolution of the image $f(\Gamma)$ on the Riemann sphere as Γ expands through the roots and poles of a rational function f of your choosing.

Figure 1 combines elements of Needham's figures [17] and [18] (pp. 364-365). The projections were calculated with the equations from p. 146:

$$X + Y i = \frac{2z}{1 + |z|^2}$$

$$Z = \frac{|z|^2 - 1}{|z|^2 + 1}$$

Figure 1. Rational function on S
 $f = (z-a)(z-b)/(z-c)$

