Project 3: Newton's Method

Recall Newton's Algorithm for approximating the roots of a complex function

$$z_{n+1} = z_n - \frac{f(z_n)}{f'(z_n)}.$$

For quadratic polynomials this gives a very simple picture.

However, for cubic and higher degrees, things become much more complicated! Can you explain what Montel's theorem has to do with this?

Use *Mathematica* or some other programming environment to make some pictures of Newton's method Julia sets.

For bonus points, discuss how Mandelbrot sets and Julia sets can appear in this context as in the picture above.