Mandelbrot Set

For each complex number c we define a quadratic map

$$f_c : \mathbb{C} \to \mathbb{C}, \qquad f_c(z) = z^2 + c.$$

We consider the orbit of 0 under this map, that is, the sequence

$$0, \quad f_c(0), \quad f_c^2(0), \quad f_c^3(0), \quad \ldots \ .$$

The **Mandelbrot set M** is the set of all complex numbers c for which this sequence is bounded.