Senior Paper: The Mandelbrot Set

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1 Introduction

The Mandelbrot Set is a set of numbers, which, given a function under *iteration*, have *orbits* that do not diverge. What it means to *iterate* a function is, that given a set of initial conditions, we take the output of the function and feed it back into the function as an input. So for the $i+1$ iteration, we take the output from the ith iteration, as well as any necessary parameters to generate the output. The definition of an *orbit* can be a bit more technical. Since we are using the output of one iteration as the input to the next iteration, then we can think about any point on the graph of the function to look like this: $(f^{(i-1)}(x),\ f^{(i)}(f^{(i-1)}(x)))$, where x may be the output of many previous iterations.