

Term Project, MA406 Spring 2017, Due Wednesday, 4/19/17

Mandelbrot's Cousins We have learned to numerically visualize the Mandelbrot set by computationally iterating a grid of points in the complex plane, and discarding magnitudes which grow to exceed 2. The difference equation which we use to evaluate whether a value is in the Mandelbrot set, $z_{n+1} = z_n^2 + z_0$, employs a very simple quadratic function. Your assignment is to create other difference equations using a variety of complex functions of your own choosing. You must visualize the results of each and assess whether or not the set of initial points which remain bound is fractal in nature, discussing any general patterns that you find, and proving your findings as theorems whenever possible. In this project you are forbidden to do any background research using any resources outside of our course textbook. You will present your work as both a formal written mathematics paper, and as a 20 minute illustrated presentation to the class on the due date.