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Numerical Methods in Physics and Astrophyiscs
Problem Set 2 - Problem 4: Fractals Through Newton-Raphson

To fulfill the necessary requirements for the assignment, the root finding program from the previous problem set is adapted to work with complex numbers and find the roots of a complex function. Two loops are then created to iterate what will be the pixels of a fractal image.

A program called `calc_fractal` is created after running `make` in the project directory. Running `./calc_fractal` uses the values in `lib/constants.c` to generate the desired data in `data/fractal_data.csv` in the format $x_0, y_0, \Re k(z), \Im k(z), \Re f(z), \Im f(z)$, and $\log_{10}(n)$ with n being the number of iterations needed (set to 0 for no iterations).

Fractals were then plotted with `gnuplot` using the `.gp` file in `plots/`. Images of he fractals can be found in the same `plots/` directoy with the formal `fractal_plot_<ID>_<Img Vers>` with the ID corresponding to an equation and the second parameter the image version.