



2.10: Fractals

Unit Performance Assessment

A **fractal** is made up of a pattern that is **iterated** (repeated) indefinitely on successively smaller scales, as shown above.

Part 1 – In this problem, you will generate a fractal through iterations of $f(z) = z^2$. Consider $z_0 = 0.8 + 0.5i$.

1. Calculate $z_1, z_2, z_3, z_4, z_5, z_6, z_7$ as follows:
 - a. $z_1 = f(z_0)$, that is plug z_0 into $f(z)$ [Just square it!]
 - b. $z_2 = f(z_1)$ [take your previous answer and square it, and so on...]
 - c. $z_3 = f(z_2)$
 - d. $z_4 = f(z_3)$
 - e. $z_5 = f(z_4)$
 - f. $z_6 = f(z_5)$
 - g. $z_7 = f(z_6)$
2. Graph each of the numbers on the complex plane.
3. Predict the location of z_{100} .

Part 2 – Create your own fractal. Use a different complex number as z_0 and a different function to iterate.