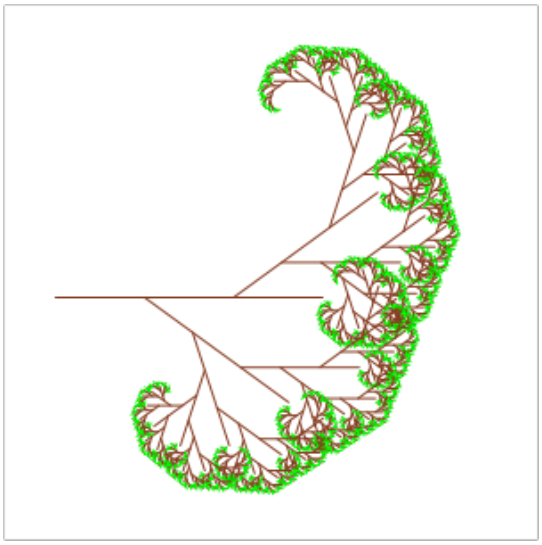
Chaos Game Sketch
January 13th 2017

A topic that I found to be very similar to the chaos game was creating fractal “trees.” I think that fractal trees are in the same classification of a “fractal” as the Sierpinski triangle (the fractal generated by the chaos game). This classification is aptly named “generative fractals.”

A simple fractal tree can be created by drawing a straight line of some length. Let’s call the length of such a line *tree-length.* The next step is to find two points, one which is a third of the way up the original straight-line, and one which is two thirds the way up of the original straight line. Now that you’ve found those to points at thirds, draw a new line which is half of *tree-length* at some angle which is 30 degrees from the original straight line. Here is a quick example:

After you’ve drawn the 2 new lines of half the original *tree-length* at the 1/3 and 2/3 points, continue this process on the each branch until you reach a point the new branch length is less than some constraint involving the original *tree-length*. Here is an example of a fully constructed fractal tree:



The relationship between the chaos game (Sierpinski triangle) and the tree fractal mentioned above is that both of the fractals can be generated from a mathematical process that can be followed and iterated over and over again with the same result given the same initial conditions. In the case of our tree fractal, the conditions would be the angle at which we branch subsequent branches, and the initial length of the trunk of the tree. For the chaos game, it matters where we place our original four corners and what the ratio for choosing points between corners should be.