

MMath 331, Spring 2006 Project 3: Fractals

Due May 8th

1. Define a IFS of your choice and compute its similarity dimension. Describe clearly how you construct such a set and justify the computation of the dimension. Also, plot the first 6 approximating sets to the IFS. Is the limit of the approximating sets a fractal? Justify your answer.
2. For each of the two sets of the figure.
 - (a) Find the IFS parameters.
 - (b) Plot the first 5 approximating sets.
 - (c) Compute the similarity dimension.
3. (EXTRA CREDIT) Make a procedure to approximate the von Koch curve, then modify it adding one parameter so that the curve becomes "spikier" or "flatter" (as in the pictures below). Compute the similarity dimension for each value of the parameter.

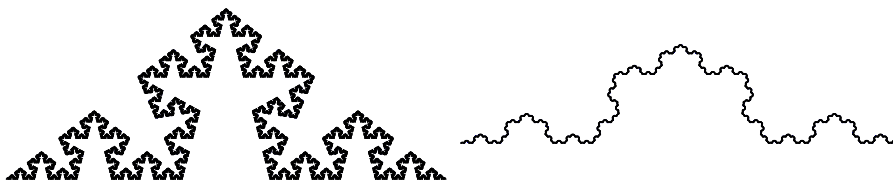


Figure 1:

As always, pay attention to clarity of exposition; and describe what you do at each step from a mathematical viewpoint, not as a commentary on how to use Maple. You can use the results we proved or stated in class. You are also allowed (even encouraged) to use other sources, as books or the Internet, but in that case, make sure to include a list your sources.