Angel and Shreiner: Interactive Computer Graphics, Sixth Edition

Chapter 9 Solutions

9.1 There are a number of possibilities. One is to use the turtle representation where the angle is 60 degrees and the distance forward is half the size of the triangle. Then the sequence $FFRRFFRRFRFRRFRRFRFRR$ will draw the edges of the four triangles. Another approach is to have 3 productions, each of which draws one of the interior triangles.

9.2 Start with the definition of fractal dimension (page 322)

$$d = \frac{\ln k}{\ln n}.$$

We can measure values of k and n based on the idea that the ruler length (or scale) determines n and the measured distance with that ruler determines k. If the coastline is a fractal, a plot of these number for different rulers (maps of different resolutions) on log log paper should be approximately linear with the slope of the line yielding the fractal dimension.