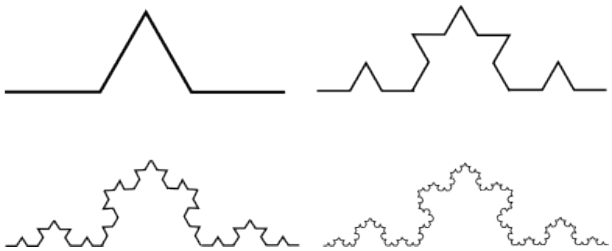
DEPARTMENT OF MATHEMATICS

MATHS 190 Lecture 15 Summary

This lecture looked at fractals. There is no formal mathematical definition of a fractal, but informally we say that any image or structure with infinite detail is a fractal. A common feature of many fractals is self-similarity; if you take a tiny piece of a fractal and magnify it, it will look like the original object.

Examples of fractal-like objects that appear in nature include broccoli and the coastline of a country (how is it possible to measure the length of the coastline since the smaller the scale you take, the more wiggles appear?)

We looked at different ways to construct fractals by hand or with a computer. We constructed the Koch curve, and showed it had infinite length, and discussed the Sierpinski carpet, and showed it had zero area. We also looked at how to construct fractals by collage.



Before you come to the next lecture: You should spend an hour or two thinking and reading about the ideas presented in the lecture. In particular:

- Look at the pictures in section 6.1 of the text and read sections 6.1 and 6.3.

You should also:

- Read section 6.6 to prepare for the next lecture.

Other activities you could do if you have time are:

- Find some more examples of fractals in nature.
- Ask your family and friends how they would measure the coastline of New Zealand. Exactly.