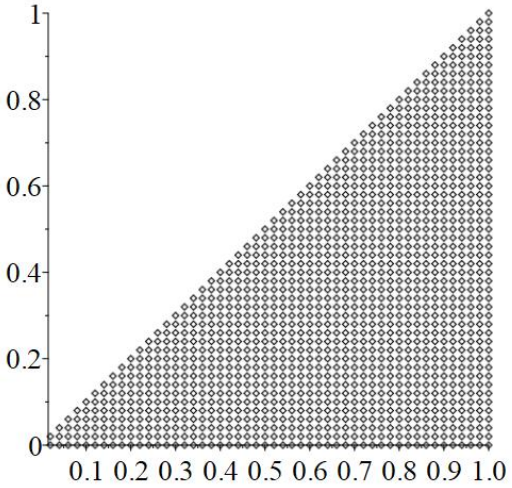
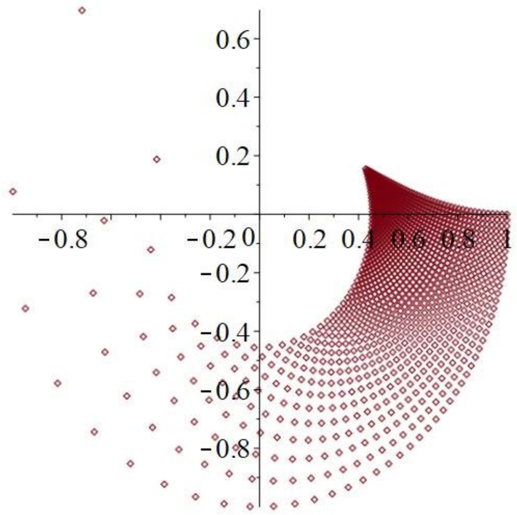
To the i





The i in To the i is a complex number whose square equals -1.

The set of complex numbers is two-dimensional, represented as a plane. In this plane, the real numbers are on the horizontal axis, and purely imaginary numbers are on the vertical axis. The number 0 is where both axes meet, the number i is up one unit from 0. In general, a complex number has both a real and an imaginary part, i.e., a complex number z can always be written as z=x+iy, where both x and y are real numbers.

With real numbers we can e.g. add, multiply, and take powers. The same can be done with complex numbers. Thus, it makes sense to take the i-th power of a (nonzero) number, to raise a number to the i.

Starting with 2+3+4+5+…50=21*49 points in the complex plane, organised neatly in a triangular shape as in the picture on the left, we have plotted on the right the images of these points under the i-th power map.

In To the i, we have also depicted the images of the lines which form the boundary of the triangle: the real line, the line through 0 and 1+i, and the vertical line through 1.
Under the i-th power map, lines through 0 become circles, and the line through 1 becomes a curve (yellow) which approaches two circles at either end.