Chapter 2: Geometric Iteration

Worksheet to accompany

David Feldman, *Chaos and Fractals: An Elementary Introduction*,
Oxford University Press, 2012

1. In this exercise we will consider a function that takes a shape and shrinks it so its height and width are both half as long.

   (a) Sketch the first 4 iterates of the function $f(x)$ for the following initial shapes.

      i. A square
      ii. A circle
      iii. A rectangle
      iv. Some other shape of your choice

   (b) Summarize your findings. What happens to different shapes? Are there any fixed points? Are there any cycles? Are the fixed points attracting or repelling?

2. Repeat the above exercise, but now consider a function that takes a shape and rotates it by a quarter turn clockwise.