Chapter 26: The Hénon Map

Worksheet to accompany

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

The Hénon Map is given by:

$$
\begin{aligned}
x_{n+1} &= y_n + 1 - a x_n^2 \\
y_{n+1} &= b x_n \ .
\end{aligned}
\tag{1}
$$

We will use the parameters a and b:

$$
a = 0.155 \quad \text{and } b = 0.6 \ .
\tag{2}
$$

1. Calculate the first two orbits of the seed $x_0 = 0.8$, $y_0 = 1$.

   (a) Sketch a time-series plot for the x orbit.
   (b) Sketch a time-series plot for the y orbit.
   (c) Plot the orbits in the x-y-plane.

2. Repeat the above question, but use the seed $x_0 = 0$, $y_0 = 0$.