1. How many state variables does the logistic map have?

   0

   1

   2

   Undefined

2. How many state variables does the Hénon map have? wikipedia.org/wiki/Henon_map

   0

   1

   2

   Undefined

3. Point your browser to:

   `http://tuvalu.santafe.edu/~jgarland/LogisticTools.html`

   Use the application to compute and plot the first 50 iterates of the logistic map from $x_0 = 0.2$ and $r = 2$. *Hint: you'll need to hit the "restart simulation" button after entering those values in the dialog boxes.* Repeat this process for different initial conditions in the range $0.1 < x_0 < 0.8$. Do all of these initial conditions limit to the same fixed point?

   Yes

   No

4. With $r = 2$, can the dynamics be described as an "attracting fixed point"?

   Yes

   No

5. Is this fixed point stable or unstable?

   stable

   unstable

6. If the fixed point in questions 3-5 is an attractor, what is its *basin of attraction*?

   Not an attractor, and thus no basin of attraction.

   $x_0 \in (0, 1]$

   $x_0 \in [0, 1]$

   $x_0 \in (0, 1)$

   $x_0 \in (0, \pi/10) \cup (\pi/10, 0.999)$

7. Now, plot the first 50 iterates of the logistic map with $r = 2$ starting from $x_0 = 0.2$. Repeat for $r = 2.7$ As you established in a previous quiz, both are fixed points, however, do the transients have the same shape?

   Yes

   No

8. Again, compute and plot the first 50 iterates of the logistic map from $x_0 = 0.2$ and $r = 2.7$ and then repeat this using $r = 2.8$. As you have seen, the system has fixed points for both of these r values. Which of the following makes this statement true: "The transient of $r = 2.7$ dies out ..... the transient with $r = 2.8$?

   faster than

   slower than

   at the same speed as