The goal of this assignment is to create a cobwebbing diagram and bifurcation diagram for the logistic difference equation
\[ u_{n+1} = \rho u_n (1 - u_n). \]
We will explore different parameter values of \( \rho \).

1. Create a cobwebbing diagram for the logistic difference equation for the following values of \( \rho \). Use at least \( n + 1 \) initial conditions where \( n \) is the number of equilibrium solutions.
   
   (a) \( \rho = 0.8 \)
   
   (b) \( \rho = 1.5 \)
   
   (c) \( \rho = 2.8 \)
   
   (d) \( \rho = 3.2 \)
   
   (e) \( \rho = 3.5 \)

2. What do you observe about the behavior of solutions for the different values of \( \rho \)?

3. Create a bifurcation diagram for \( \rho \in [0, 4] \). A bifurcation diagram plots the parameter rho along the horizontal axis and the equilibrium solution along the vertical axis. Comment on what you observe in your bifucation diagram.