

Math 388 Exercises

Instructions: answer these questions for your benefit. (Don't turn in.)

1. Fill in the blanks, using the bifurcation diagram to get a guess and using the calculator to verify your guess.
 - (a) The family $f(x) = rx(1 - x)$ has a 4-cycle sink with $r = \underline{\hspace{2cm}}$.
 - (b) The family $f(x) = rx(1 - x)$ has a 3-cycle sink with $r = \underline{\hspace{2cm}}$.
 - (c) The family $f(x) = rx(1 - x)$ has a 6-cycle sink with $r = \underline{\hspace{2cm}}$.
 - (d) The family $f(x) = rx(1 - x)$ has a 5-cycle sink with $r = \underline{\hspace{2cm}}$.
2. What happens in the bifurcation diagram just to the right of the 5-cycle sink?
3. To program a bifurcation diagram, what would you use for x_0 ? How much does it matter? How many iterates would you compute? How much does this matter?
4. Why does the bifurcation diagram for $f(x) = rx(1 - x)$ stop at $r = 4$? Is $f(x) = 5x(1 - x)$ a map on $[0, 1]$?