Homework 2

(Due Thursday, Feb. 7)

Chapter 1.6: 17, 18, 31-34, 41-46.

Chapter 1.7: 33, 34, 43-54 (for 50 and 54, find an updating rule of the form $p_{t+1} = rp_t$).

HW2 Additional Problem 1: I am growing a population of mutant sea monkeys. Every night, the population of sea monkeys is replaced by the next generation of sea monkeys. The per-capita production each night is $3.2 - \frac{P}{500000}$, where P is the population of the previous generation. Write an updating function for the number of sea monkeys, find the equilibria, and determine their stability.

HW2 Additional Problem 2: Every morning, I scoop out a quarter of the sea monkeys to feed to my slime molds. Every night, the remaining monkeys grow as described above. Write an updating function, find any equilibria, and determine their stability.

HW2 Additional Problem 3: Choose and complete one of the following problems in Chapter 3.2: 27, 32, 36 (the "stability condition" is the condition on the slope of the updating function that determines the stability of an equilibrium).