

# Mathematical Models in the Life Sciences

## Exam Review

Due: 10:00 AM February 22, 2008

- **READING:** Edelstein-Keshet — Review Chapters 1-3.
  - **PROBLEMS:** None!
  - **REMINDER:** Assignment 4 due on Tuesday, Feb 19.
1. There are **no** assigned problems this week. Instead, I suggest you review for our first test. Make sure you're comfortable with all of the material we covered in lecture and homework. In particular, please review the following:
    - (a) Linear difference equations.
      - Make sure you know how to solve linear difference equations and interpret the solutions.
    - (b) Matrices.
      - Know how to find their eigenvalues and eigenvectors.
    - (c) Nonlinear difference equations.
      - Know how to find their **fixed points**.
      - Know how to check the **stability** of these fixed points.
      - Be able to explain the meaning of “stability of a fixed point” and understand the procedure of computing a linear approximation near a fixed point.
      - Be able to explain the characteristics of a bifurcation.
      - Know how to cobweb.
    - (d) This is not an exclusive list. Everything covered in lecture or homework is fair game!
- **TEST 1 DETAILS**

We will have an in-class test on **Friday, February 22**. The test will be open book and open note. You are free to use any written material you bring with you to class. You may not use any electronic computational device or communicate with anyone else (other than me) during the exam.