Due Monday, February 19, 12:50 p.m. Note: This is a "double" assignment worth 20 points. Most of the problems can be done using the mathematica notebooks discussed in class (available on the course website on canvas).

**Reading:** Chapter 8 except Section 8.8. Chapter 12: Sections 12.1, 12.2, 12.3 and 12.9. Please make a note on your homework how long it took you to complete the homework.

**Problem 1. Central force orbits on the computer.** Problem 8.25★★★★ from the book.

**Problem 2.** Repeat the previous problem, only this time use a central force $F = -k/r^{3/2}$.

**Problem 3. A simple nonlinear equation.** Problem 12.1★ from the book.

**Problem 4. Another nonlinear equation.** Problem 12.2★ from the book.

**Problem 5. cos map on a calculator.** Problem 12.21★★ from the book.

**Problem 6. Quadratic map.** Problem 12.22★★ from the book.

**Problem 7. Convergence of the logistic map.** Problem 12.30★★ from the book.


**Problem 10. Bifurcation diagram - part III.** Problem 12.34★★★★ from the book.