Department of Applied Mathematics and Statistics
COLORADO SCHOOL OF MINES
MATH484: Capstone - Mathematical and Computational Modeling

Assignment #1
Due Tuesday, January 27, 2015

For problems which require computational simulation, please print and submit both your code and results (e.g., pictures).

1. Friedman & Littman, p.14, Problem **1.8.1**

2. Friedman & Littman, p.15, Problem **1.8.3**

3. Friedman & Littman, p.17, Problem **1.10.2**

4. Friedman & Littman, p.17, Problem **1.10.3**

5. Friedman & Littman, pp.17-18, Problem **1.10.4**

6. Friedman & Littman, p.24, Problem **1.13.1**
For this problem use $N = 2$ and investigate each of the three different cases in 1.10.2, 1.10.3, and 1.10.4. For the initial lengths use $x_1(0) = \frac{1}{2}x^*$, $x_2(0) = x^*$, and for the μ-values use $\mu_1 = \mu_2 = \mu$, where x^* and μ are given in each problem.

7. Friedman & Littman, p.24, Problem **1.13.2**
For this problem use $N = 2$ and investigate each of the three different cases in 1.10.2, 1.10.3, and 1.10.4. Since there are two crystals, use the initial lengths and μ-values from Problem 6. Don't perform any simulations - you can calculate these limits analytically given the necessary constants and the results of the previous problems. Note that when the first crystal dissolves at time τ_1, the problem reduces to the single-crystal case and the "initial length" in this situation can be determined by the remaining crystal length at time τ_1.