CS 323E **Homework 4** **Due: Feb 19, 2002**

1. (10 points)
   Do P2.1.1 from Textbook.

2. (10 points)
   (a) Assume that L (scalar), R (scalar), and c(1:4) are given. Assume that L $<$ R. Write a MATLAB function that computes $a(1:4)$ so that if $p(x) = a_1 + a_2 x + a_3 x^2 + a_4 x^3$, then $p(R) = c_1$, $p'(R) = c_2$, $p''(R) = c_3$, and $p(L) = c_4$. Use "\" ("mldivide") to solve any linear system that arises in your method.

   (b) Write a MATLAB function a = TwoPtInterp(R,cR,L,cL) that returns the coefficients of the polynomial $p(x) = a_1 + a_2 x + \cdots + a_n x^{n-1}$ that satisfies $p^{(k-1)}(R) = cR(k)$ for $k = 1 : length(cR)$ and $p^{(k-1)}(L) = cL(k)$ for $k = 1 : length(cL)$. The degree of p, i.e., n, should be one less than the total number of end conditions.