

GEO 5500 Numerical Methods in the Geosciences
Computer Assignment #6:
Roots of Equations

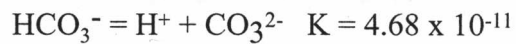
Assigned: February 17, 2005

Due: February 24, 2005

Relevant reading: Lindfield and Penny, Chapter 3.1-3.3, 3.7, 3.14

1. Lindfield and Penny, problem 3.4

2. Consider the simple carbonate system that we discussed in class



Assume that

- the concentration of Ca^{2+} is .003 moles
- the concentration of total carbon (carbonate plus bicarbonate) is .01 moles

The best way to solve this problem is to write down the system of equations to determine the pH and concentrations of OH^- , carbonate, and bicarbonate and then the first step of the Newton-Raphson technique to solve the problem on paper before writing a computer code.