Numerical Analysis - Homework 8

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Homework Problems

Write code for Fixed Point Iterations without first watching the code walk though.
See how far you can get on your own.

You should attempt all these problems before class, but we will work on them in class with our groups.

- Chapter 3.4, problems 6 and 8
- Non-Book Problem: Imagine you are writing computer code that solves for the $\sqrt{2}$ and you want to do this using fixed point iteration. Find the following:
  - An iteration that converges to $\alpha = \sqrt{2}$
  - An iteration that has a fixed point of $\alpha = \sqrt{2}$ but will not converge
  - An iteration that has a fixed point of $\alpha = \sqrt{2}$ that converges but very slowly.

  You should use the Contraction Mapping Theorem to show that the iterations you write down have the specified behavior.
- Optional: Chapter 3.4 problem 12 - The Logistic Equation and the Theory of Chaos.