Math 781: Homework Assignment # 1

due Thursday, 9/4/14

Reading 1.1, 1.2, 2.1

Problems §1.1: 14, 25; §1.2: 7, 10, 16; Problem Plus 1.

**Problem Plus 1.** Define a sequence by

\[ x_0 = 2; \quad x_{n+1} = \frac{1}{2} x_n + \frac{1}{x_n} \quad \forall n > 0. \]

It is known that \( x_n \to \sqrt{2} \). Prove that the order of the convergence is quadratic.