Practise questions on fixed pt. iteration.

Q.1) (a) Show that if A is any +ve no., then the sequence defined by

$$x_n = \frac{1}{2}x_{n-1} + \frac{A}{2x_{n-1}} \quad ; \quad n \geq 1$$

converges to $\sqrt{A}$ whenever $x_0 > 0$.

(b) What happens if $x_0 < 0$?

Q.2) Use a f.p. iteration method to find an approx^n to $\sqrt[3]{25}$ that is accurate to w/in 10^{-4}.

Q.3) Use a f.p. iteration method to determine a solution accurate to w/in 10^{-2} for $2\sin \pi x + x = 0$ on $[1, 2]$. Use $x_0 = 1$.