Cyrus Simons
Section 3.4 _Q6

$x^2 - 5 = 0$, $\alpha = \sqrt{5}$

use $\dot{x} = x + c(x^2 - 5) \equiv g(x)$

$g(\alpha) \equiv \alpha = \alpha + c(x^2 - 5)$

$-\alpha \quad -\alpha$

$0 = c(x^2 - 5) \Rightarrow 0 = x^2 - 5$

so

$c(x^2 - 5) = (x^2 - 5)$

$c = 1$

$\lim_{n\to\infty} x_{n+1} = \lim_{n\to\infty} x_n + c(x_n^2 - 5)$

$c = 1$

$x_{n+1} = x_n + (x_n^2 - 5)$

$\lim_{n\to\infty} x_{n+1} = \alpha = \sqrt{5} = \lim_{n\to\infty} x_n$

$\sqrt{5} = \sqrt{5} + ((\sqrt{5})^2 - 5)$

$-\sqrt{5} \quad -\sqrt{5}$

$0 = 5 - 5$

$0 = 0$ ✓