$$e_k \leq m^k \frac{|x_1 - x_0|}{1-m}$$

$$\Rightarrow \boxed{e_k \leq \varepsilon} \quad \text{Convergence}$$

$$\Rightarrow m^k \frac{|x_1 - x_0|}{1-m} \leq \varepsilon$$

$$m^k \leq \frac{\varepsilon(1-m)}{|x_1 - x_0|}$$

$$k \log m \leq \log\left\{\frac{\varepsilon(1-m)}{|x_1 - x_0|}\right\}$$

$$k \geq \frac{\log\left\{\frac{\varepsilon(1-m)}{|x_1 - x_0|}\right\}}{\log m} \qquad x_1 = g(x_0)$$

$x = \cos(x)$, $r = 0.7391$ $\Sigma \in [0.5, 1]$

$x_0 = 1$, $m = \sin 1 = 0.8415$

$\varepsilon = 10^{-5}$, $k \geq \frac{(\quad)}{(\quad)} \approx 73$