

Q1 Let $A > 0$ and $g(x) = 2x - Ax^2$.

1. Show that if fixed-point iteration converges to a nonzero limit, then the limit is $x = 1/A$.
2. Find an interval about $1/A$ for which fixed-point iteration converges, provided x_0 is in that interval

Q2 Determine the number of iterations necessary to solve $f(x) = x^3 + x - 4 = 0$ with accuracy 10^{-3} in the interval $[a, b] = [1, 4]$. [Note: $\log_{10}(3) \approx 0.4771$ and $\log_{10}(2) \approx 0.3010$]