QUIZ 3(10 Points)

Choose 2 of the following problems.

(1) Suppose p is a root of multiplicity m. Then $f^i(p) = 0$ for $0 \leq i \leq m-1$, and $f^m(p) \neq 0$. Show that if p is a root of multiplicity m, then the fixed point method

$$g(x) = x - \frac{mf(x)}{f'(x)}$$

has $g'(p) = 0$.

(2) Let $p_n = 10^{-2^n}$. Show that p_n converges to 0 quadratically.

(3) Use Gaussian elimination to solve

$$\begin{aligned} 2x_1 - 2/3x_2 + 3x_3 &= 1 \\ -x_1 + 2x_3 &= 3 \\ 4x_1 - 9/2x_2 + 5x_3 &= 1 \end{aligned}$$