Scientific Computing HW 1

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1. (a) We find fixed points in the interval $[0, 1/2)$ by

$$x^* = f(x^*) \implies x^* = 2x^* \implies x^* = 0$$

We find fixed points in the interval $[1/2, 1]$ by

$$x^* = f(x^*) \implies x^* = 2 - 2x^* \implies x^* = \frac{2}{3}$$

Thus the fixed points of the iteration are $x^* = 0, 2/3 \xrightarrow{x \to \infty} 0$ then $n \in \mathbb{N}$ for all $\forall \epsilon > 0$