HOMEWORK 2

Solve the following equation and inequation in the real domain.

(1)
$$\log_{10} x + \frac{7}{\log_{10} x} = 8.$$

(2)
$$\Big|\,|x-2|-3\,\Big| < 1\,.$$

(3) Find supremum and infimum of the set
$$\Big\{-1+\frac{1}{n^2};\ n\in\mathbb{N}\Big\}.$$

(4) Consider the sequence $a_n = \frac{n^3+1}{n^3}$. For $\epsilon = \frac{1}{1000000}$ find $n_0 \in \mathbb{N}$, such that
$$|a_n - 1| < \epsilon \text{ for all } n \geq n_0.$$