MATH 2058 - HW 5 - Solutions

1 (P.91 Q3). Show directly from the definition that the following sequences (x_n) are not Cauchy sequences.

    a) $x_n := (-1)^n$ b) $x_n := n + \frac{(-1)^n}{n}$ c) $x_n := \log n$

2 (P.91 Q9). Let $r \in (0,1)$. Let (x_n) be a sequence such that $|x_{n+1} - x_n| < r^n$ for all $n \in \mathbb{N}$. Show that (x_n) is a Cauchy sequence.