Disco II - Quiz 1

Name:_____ Box #_____

Consider the following recursively defined language in $A \subseteq \{0,1\}^*$.

$$\begin{aligned} \text{Base Case} &: \lambda \epsilon A \\ \text{Recursion} &: \text{if } x \epsilon A \text{ then } 1x1 \epsilon A, 0x0 \epsilon A. \end{aligned}$$

1. Find all words that can be made by using recursion at most three times.

2. Is $11011 \epsilon A$, justify your answer.

3. How many words can be produced by using recursion exactly four times on the empty string?