Consider the language $M$ of all binary strings with equal numbers of 0’s and 1’s.

(a) Provide an infinite set of strings that are pairwise distinguishable with respect to $M$.

(b) Assume you were asked to provide a proof using the Pumping Lemma that $M$ is not regular. Give one example of a string $z$ that is not pumpable. (You may assume $k$ is the constant of the Pumping Lemma.)

(c) Is the complement of $M$ regular or not? Justify your answer.