Assignment - 3

CS304

Prove that the following languages are not regular using the pumping lemma.

1. $\{0^n 1^m | n \leqslant m\}$. This is the language consisting of a sting of 0's followed by a string of 1's whose length is greater-than-or-equal-to the length of the string of 0's.
2. $\{0^n | n$ is a perfect square.$\}$
3. $\{0^n | n$ is a perfect cube.$\}$
4. $\{0^n | n$ is a power of 2.$\}$
5. The set of strings of 0's and 1's whose length is a perfect square.
6. The set of strings of 0's and 1's that are of the form ww, i.e., some string repeated.
7. The set of strings of 0's and 1's that are of the form ww^R, i.e. some string followed by its reverse.