Give regular expressions for each of the following languages over the alphabet \( \{0, 1\} \).

1. All strings containing the substring \( 000 \).
2. All strings not containing the substring \( 000 \).
3. All strings in which every run of \( 0 \)'s has length at least 3.
4. All strings in which every substring \( 000 \) appears after every \( 1 \).
5. All strings containing at least three \( 0 \)'s.
6. Every string except \( 000 \). [Hint: Don't try to be clever.]

Work on these later:

7. All strings \( w \) such that in every prefix of \( w \), the number of \( 0 \)'s and \( 1 \)'s differ by at most 1.
8. All strings containing at least two \( 0 \)'s and at least one \( 1 \).
9. All strings \( w \) such that in every prefix of \( w \), the number of \( 0 \)'s and \( 1 \)'s differ by at most 2.
10. All strings in which the substring \( 000 \) appears an even number of times. (For example, \( 001000 \) and \( 0000 \) are in this language, but \( 00000 \) is not.)