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

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

Work on these later:

7. All strings \( w \) such that \textit{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 \textit{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 \( \textbf{000} \) appears an even number of times.
\hfill (For example, \( \textbf{0001000} \) and \( \textbf{0000} \) are in this language, but \( \textbf{000000} \) is not.)