For each of the following languages over the alphabet $\Sigma = \{0, 1\}$, either prove the language is regular (by giving an equivalent regular expression, DFA, or NFA) or prove that the language is not regular (using a fooling set argument). Exactly half of these languages are regular. It is important to take the time to properly understand the language.

1. $\{0^n 1 0^n \mid n \geq 0\}$

2. $\{0^n 1 0^n w \mid n \geq 0 \text{ and } w \in \Sigma^*\}$

3. $\{w 0^n 1 0^n x \mid w \in \Sigma^* \text{ and } n \geq 0 \text{ and } x \in \Sigma^*\}$

4. Strings in which the number of $0$s and the number of $1$s differ by at most 2.

5. Strings such that *in every prefix*, the number of $0$s and the number of $1$s differ by at most 2.

6. Strings such that *in every substring*, the number of $0$s and the number of $1$s differ by at most 2.