1. (4 points) Give a DFA for the language \( \{ w : w \text{ contains } 01 \text{ an odd number of times} \} \) over the alphabet \( \{0, 1\} \). Present your DFA as both a picture and using textual notation. Include a brief justification for why the DFA accepts this language.

2. (4 points) Give a DFA for the language of words over the alphabet \( \{0, 1\} \) that contain the substring 01101 (those characters in adjacent positions). Present your DFA as both a picture and using textual notation. Include a brief justification for why the DFA accepts this language.

3. (4 points) Give a DFA for the language \( \{ w : w \text{ is an integer at most } 23 \} \) over the alphabet \( \{0, 1, \ldots, 9\} \). Words in this language should not have leading 0s (i.e. 01 is not valid) unless 0 is the only digit. Present your DFA using either a picture or textual notation. Include a brief justification for why the DFA accepts this language.