1. (14 points) Write regular expressions for the following languages over the alphabet $\Sigma = \{a, b\}$.

   (a) (2 points) All strings that end in $b$.

   (b) (4 points) All strings that do not end with $aa$.

   (c) (4 points) All strings that contain an even number of $b$'s.

   (d) (4 points) All strings that do not contain the substring $ba$.

2. (12 points, 4 points each) Draw DFAs for the languages from Question 1 b-d. None of your DFAs may contain more than 4 states.

3. (8 points) Consider the following NFA over the alphabet $\Sigma = \{0, 1\}$:

   ![NFA Diagram]

   Give a one-sentence description of the language recognized by this NFA (4 points). Write a regular expression for this language (4 points).

4. After releasing L to developers, many programmers complain that L does not allow a negative integer constants. For example, programmers would like to write the following in L:

   ...
Furthermore, programmers complain that allowing leading 0's on integer constants is confusing. For example, the L program

```latex
let x = 0001 in ...
```

should no longer be legal. Give a \texttt{flex} rule that matches this new definition of integer constant. You do not have to provide any action for the rule.