

Print Name (family name first): _____

Write all answers in the space provided.

During this quiz it is prohibited to:

1. exchange information with any other person in any way, including by talking or exchanging papers or books;
2. use any electronic aid, including calculators;
3. use any books or notes;
4. leave the classroom before you complete and turn in your quiz.

I have read and understand all of the instructions above. On my honor, I pledge that I have not violated the provisions of the NJIT Academic Honor Code.

Signature and Date

1. Consider the alphabet $\Sigma = \{0, 1\}$. Define a string over Σ to have a *double letter* if the string contains either 00 or 11 as a substring.

- Let L_1 be the language of all strings over Σ that begin and end with 0.
- Let L_2 be the language of all strings over Σ having odd length.
- Let L_3 be the language of all strings do *not* end in a double letter.

(a) Give a regular expression for L_1 .

(b) Give a regular expression for L_2 .

(c) Give a regular expression for L_3 .

(d) Give an example showing that L_3 is *not* closed under concatenation. Explain your answer.