1. **Problems:**

# Regular Expressions (50 points)

Write regular expressions for the following. You may use either Perl/Python notation, but make sure to say which one you are using. By “word”, I mean an alphabetic string separated from other words by whitespace, any relevant punctuation, line breaks, and so forth.

1. the set of all alphabetic strings

**Ans.: [a-zA-Z]+**

1. the set of all lower case alphabetic strings ending in a b

**Ans.: [a-z] \* b**

1. the set of all strings from the alphabet {“a”, “b”} such that each “a” is immediately preceded by and immediately followed by a “b” Examples:

**Ans.: (b+(ab+)+)?**

1. all strings that start at the beginning of the line with an integer and that end at the end of the line with a word

**Ans.: ˆ\d+\b. \* \b[a-zA-Z]+$**

# Money! (50 points)

Create a **deterministic FSA** for English money expressions. You should handle amounts up to $100,000, and make sure that “cent” and “dollar” have the proper plural endings when appropriate. Formulate the problem precisely, making only those distinctions necessary to ensure a valid solution. Draw a diagram of the complete state space.

