CSCI 2400 – Models of Computation

Homework 3

Due: Thursday February 12

Problem 1. Give a regular expression that describes the following language:

$$L_1 = \{a^n b^m : n + m = 4k, \quad k \geq 0\}$$

Problem 2. Prove that $L((r^* + s^*)^*) = L((r + s)^*)$.

Problem 3. Give a regular grammar that generates the real numbers of the form $[+/-]0.xE[+/-]y$ where x and y are strings which consist of integers $0, \ldots, 9$, such that $|x| \geq 1$, $|y| \geq 1$. Further, the following symbols $., +, -, E, 0, 1, 2, 3, 4, 5, 6, 7, 8, 9$ are terminal symbols. An example of a valid real number is $+0.31415926535897E+01$