CSE105 Sections A and B Homework 2 Fall 2001

Note: The homework is the same for both sections. It will not be handed in. However, you are *strongly* encouraged to do the homework in order to prepare for the second quiz on **November 6**. The quiz will contain similar problems.

1) #2.2
2) #2.4 (a,c,d,e)
3) #2.5 (d,e)
4) #2.6 (a,b)
5) #2.9
6) #2.15
7) #2.18 (a,b)
8) #3.1 (a,c)
9) #3.2 (b,d)
10) #3.8 (b,c)
11) Convert the following CFG to Chomsky Normal Form. (The set of variables for the grammar is $V = \{R, S, T, X\}$ and the set of terminals is $\Sigma = \{a, b\}$.)

    $R \to XRX \mid S$
    $S \to aTb \mid bTa$
    $T \to X$
    $X \to a \mid b$

12) Draw the state diagram for a PDA recognizing the language

    $$L = \{a^i b^j c^k \mid i, j, k \geq 0 \text{ and } i + j < k\}.$$

    (Here the input alphabet is $\Sigma = \{a, b, c\}$.)