CSE 105: Introduction to the Theory of Computation, Fall 1999
HW3 Due Thursday, Nov. 18, at the beginning of class

Turing Machines

For these problems, you can use any variant of TM that you want (e.g., non-determinsitic, multiple tapes,...) unless otherwise specified.

1. Problem 3.9 (a) and (b) in text.
2. Problem 3.14 (a), (d), (e) in text.
3. Problem 3.15 (b) and (d) in text.
4. Describe a Turing Machine that accepts $\{ww^R uu^R \mid w,\ u\ in\ \ \{a,b\}^*\}$

   (Here R stands for the reverse operator. You needn't give a state diagram, but can describe informally the steps of the TM).
5. Show that the context-free languages are contained in the Turing-decidable languages.
6. Construct a multitape TM that, given a binary representation of number **i** on its first tape, and a binary represention of number **j** on its second tape, writes the binary representation of **i*j** on its third tape, and then halts.