Homework 6

CS 6243 – Spring 2005 assigned February 24, 2005
Tom Bylander, Instructor due March 3, 2005

1. (50 pts.) Develop rules for the following concepts:

   (a) For integers, find rules to infer *Even* (a predicate of one argument) from *Successor* (a predicate of two arguments) and *Even*(0). *Even*(x) is true if x is an even number. *Successor*(x, y) is true if $x + 1 = y$.

   (b) For rooted trees, find rules to infer *Sibling* (a predicate of two arguments) from *Child* and *Equal* (both predicates of two arguments). *Sibling*(x, y) if x and y are two different nodes with the same parent. *Child*(x, y) is true if x is a child of y. *Equal*(x, y) is true if x and y are the same node.

2. (50 pts.) For the following examples, determine the Support Vector Machine that correctly classifies them. Hint: the concept is $(x_1 \vee (x_2 \wedge x_3))$ and the support vectors are examples 2 through 5. Hint: Weka's SMO classifier might be useful here.

Attributes			Class
x_1	x_2	x_3	y
0	0	0	−1
0	0	1	−1
0	1	0	−1
0	1	1	1
1	0	0	1
1	0	1	1
1	1	0	1
1	1	1	1