L1 - 12

a)

dotProduct(v1, v2) = {

0, if v1 is empty or v2 is empty;

v1[0] \* v2[0] + dotProduct(v1[1:], v2[1:]), otherwise

}

b)

maxAtom(L) = {

-∞, if L is empty;

max(L[0], maxAtom(L[1:])), if L[0] is a number;

max(maxAtom(L[0]), maxAtom(L[1:])), if L[0] is a list;

maxAtom(L[1:]), otherwise

}

c)

eval(E) = {

E, if E is an atom (number);

op(eval(E1), eval(E2)), if E = (op E1 E2)

}

d)

evenElements(L) = {

True, if |L| is even;

False, otherwise

}

L2 - 12

preorder(T) = {

∅, if T is empty;

[root] + preorder(left) + preorder(right), otherwise

}

L3 - 14

countAtoms(L) = {

1, if L is an atom;

sum(countAtoms(L\_i)), if L is a list

}