Homework 3

Consider the following program with an extensional database (EDB)
e(., .) = {[0, 1], [1, 0], [1, 2], [3, 2], [4, 5]}:
v(X) ← e(X, _), not nv(X).
v(Y) ← e(_, Y), not nv(Y).
nv(X) ← e(X, _), not v(X).
nv(Y) ← e(_, Y), not v(Y).
c ← e(X, _), not v(X), not c.

a) Decide whether the following formula holds in every model of the program with the given EDB:
v(3) ∧ v(4) ∧ (v(1) ∨ v(2)). Explain.
b) Find the well-founded model of the program with the given EDB.
c) Find all stable models of the program with the given EDB.
d) Let the EDB represent a (directed) graph. Explain, consisely (a single sentence will do), meaning of the predicates v(.) and nv(.), and the meaning of stable models of the program.