Exercise 41

Given Kripke structure $K$ as shown above. Justify your answers to the following questions.

a) Does $K \models f$ hold for ACTL formula $f := \AX p \lor \AX q$?

b) Let $g := f \setminus A$. Does $K \models g$ hold?

c) Based on the results of a) und b): are $f$ and $g$ equivalent?

d) Based on the results of a), b) and c): is there an LTL formula which is equivalent to $f$?

Exercise 42

Given Kripke structure $K$ below. Formulate the transition function as propositional formula.

Exercise 43

Formulate (a) two steps, (b) three steps done in $K$ with the previously identified propositional formula.

Exercise 44

a) Formulate that state $\bar{x}\bar{y}$ is not reachable after one step in propositional logic (from the initial state). Use limboole to evaluate your encoding.

b) Now show that $\bar{x}\bar{y}$ is reachable after two steps. Evaluate your encoding with limboole.