a)

i)

A1 (w∧x) → y

A2 (w → (x ∨ y))

A3 (y → z)

A4 ( ┐w → z)

ii)

O1 (w∨x∨y∨z)

O2 (┐w∨┐x∨┐y∨┐z)

O3

iii)

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| W | X | Y | Z | A1 | A2 | A3 | A4 |
| 0 | 0 | 0 | 0 | 1 | 1 | 1 | 0 |
| 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 |
| 0 | 0 | 1 | 0 | 1 | 1 | 0 | 0 |
| 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 |
| 0 | 1 | 0 | 0 | 1 | 1 | 1 | 0 |
| 0 | 1 | 0 | 1 | 1 | 1 | 1 | 1 |
| 0 | 1 | 1 | 0 | 1 | 1 | 0 | 0 |
| 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| 1 | 0 | 0 | 0 | 1 | 0 | 1 | 1 |
| 1 | 0 | 0 | 1 | 1 | 0 | 1 | 1 |
| 1 | 0 | 1 | 0 | 1 | 1 | 0 | 1 |
| 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 |
| 1 | 1 | 0 | 0 | 0 | 0 | 1 | 1 |
| 1 | 1 | 0 | 1 | 0 | 1 | 1 | 1 |
| 1 | 1 | 1 | 0 | 1 | 1 | 0 | 1 |
| 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |

Z tabulky vypliva, ze existuje 6 moznosti, kto moze byt vinny a nevinny. Su oznacene zelenou farbou.

M1  Z je vinny. Ostastny su neviny

M2 y,z su vinny. Ostatny su nevinny

M3 x,z su vinny. Ostatny su nevinny

M4 w je nevinny. Ostatny su vinny

M5 x je nevinny. Ostatny su vinny

M6 vsetci su vinny

Vieme, ze Z je urcite vzdy vinny. Pri ostatnych nemozno urcit vinnu alebo nevinnu.

b)

(1) ((((s∨q)∧(p∨s)) ∨t)∧(t → (p ∨ s))∧(t→(┐s→q))∧(r→s)) elimininacia implikacie

((((s∨q)∧(p∨s)) ∨t)∧(┐t ∨(p ∨ s))∧(┐t∨(┐┐s∨q))∧(┐r∨s)) distribucia

(((((s∨q)∨t)∧((p∨s) ∨t))∧(┐t ∨(p ∨ s))∧(┐t∨(s∨q))∧(┐r∨s)) odstranenie zatvoriek

((((s∨q∨t)∧(p∨s ∨t)∧(┐t ∨p ∨ s)∧(┐t∨s∨q)∧(┐r∨s))

(((t ∧┐t)∨ ((s∨q)∧(s∨q))∧((t ∧┐t)∨ ((p∨s)∧(p∨s))∧(┐r∨s))

(((F∨ (s∨q)∧(F∨ (p∨s))∧(┐r∨s))

(((s∨q)∧(p∨s))∧(┐r∨s))

((s∧s)∨(p∧q)∧(┐r∨s))

( s ∨(p∧q)∧(┐r∨s))

nestihaaaaaaaam :(

(2) (((p∧q)→r) → r) → s)