1.1.5

**If someone is happy, then Vincent is happy.**

(∃xHAPPY(x) → HAPPY(VINCENT))

**If someone is happy, and Vincent is not happy, then Jules is happy or Butch is happy.**

((∃xHAPPY(x) ∧ ¬HAPPY(VINCENT)) →(HAPPY(JULES) ∨ HAPPY(BUTCH)))

**Everyone is happy, or Butch and Pumpkin are fighting, or Vincent has a weird experience.**

(∀yHAPPY(y) ∨ (FIGHTING(BUTCH)∧FIGHTING(PUMPKIN)) ∨ WEIRDEXPERIENCE(VINCENT)))

**Some cars are damaged and there are bullet holes in some of the walls.**

(∃cDAMAGED(c) ∧∃wBULLETHOLES(w))

**All the hamburger are tasty, all the fries are good, and some of the milk-shakes are excellent.**

(∀hTASTY(h) ∧(∀fGOOD(f) ∧(∀mEXCELLENT(m))

**Everybody in the basement is wearing a leather jacket or a dog collar.**

(∀xINBASEMENT(x) → (WEARINGLEATHERJACKET(x)∨ WEARINGDOGCOLLAR(x)))

1.1.7

**1. robber(y)**

Free

**2. love(x,y)**

Both are free

**3. love(x,y) → robber(y)**Second y is bound, the rest is free

**4. ∀y(love(x,y) → robber(y))**First y is free, second and thirth y is bound, first x is free

**5. ∃w∀y(love(w,y) → robber(y)).**

First w and y are free, the rest are bound

1.1.10

1.1.11