Resolution of FOL

1. It is crime for an American to sell weapons to hostile nations.

$American(x) \wedge weapon(y) \wedge Sells(x,y,z) \wedge Hostile(z) \rightarrow Criminal(x)$

$\neg[American(x) \wedge weapon(y) \wedge Sells(x,y,z) \wedge Hostile(z)] \vee criminal(x)$

$\neg American(x) \vee \neg weapon(y) \vee \neg sells(x,y,z) \vee \neg Hostile(z) \vee criminal(x)$

Nono has some missile

$\exists x : Owns(Nono, x) \wedge Missile(x)$

$owns(\overset{Nono,}{m_1}) \wedge Missile(m_i)$

All of its missiles were sold to it by colonel West.

$\forall x \; Missile(x) \wedge Owns(Nono, x) \rightarrow Sells(West, x, Nono)$

$\neg \forall x \; [Missile(x) \wedge owns(Nono, x)] \vee Sells(wet, x, Nono)$

$\neg Missile(x) \vee \neg owns(Nono, x) \vee sells(wet, x, Nono)$

Missiles are Weapons:

Missile (x) → Weapon (x)

¬Missile (x) ∨ Weapon (x)

An enemy of America counts
are "hostile";

Enemy (x, America) → Hostile

¬Enemy (x, America) ∨ Hostile

West, who is American...

American (West)

The Country Nono, an
enemy of America.

Enemy (Nono, America)

Prove : Cirminal (west)

¬Cirminal (west)

¬American (x) ∨ ¬Weapon(y) ∨ ¬sells (x,y,z)
    ∨ ¬Hostile (z) ∨ criminal (x)

¬Cirminal (west)

¬American(west) ∨ ¬weapon(y) ∨ ¬sells (x,y,z)
    ∨ ¬Hostile (z)

American (west)

¬Weapon(y) ∨ ¬sells (west, y, z)
    ∨ ¬Hostile (z)

¬Missile(x) ∨ Weapon

¬Missile(y) ∨ ¬sells(west, y, z)
    ∨ ¬Hostile (z)

Missile (M₁)

¬Sells(west, y, z) ∨ ¬Hostile (z)

¬Missile(x) ∨ ~owns (Nono, x) ∨ sells(west, M₁, Nono)

¬Missile (M₁) ∨ ~owns (Nono, M₁) ∨ ¬Hostile (Nono)

Missile (M₁)

¬Owns(Nono, M₁) ∨ ¬Hostile (Nono)

¬Hostile (Nono)

owns(Nono, M₁)

¬Enemy (x, America) ∨ Hostile(x)

$\neg$ Enemy (x, America) v Hostile
Nono

$\neg$ Enemy (Nono, Ame...

Empty