**CPT\_S 540 Homework 6**

**Chenrui Xu**

Question 1

Question 2

(a)

(b)

(c)

(d)

(e)

Question 3

(b)

(c)

(d)

(e)

Question 4

Add clause:

Negative as C9:

Resolve: C4 and C9 left as C10

{x1/x2}:

Resolve: C10 and C5 left as C11.

{x2/Mary} C11

{y/Apple}: C8

Resolve: C11 and C8 left as C12

Resolve: C12 and left empty clause.

Proved.

Question 5

fof(a1, axiom,

? [X] : (Likes(X, Apples)) => Plays(John, Chess) & Plays(Mary, Chess)).

fof(a2, axiom,

? [X] : (Likes(X, Oranges)) => Plays(John, Go) & Plays(Mary, Go)).

fof(a3,axiom,

! [X] : (~(Likes(X,Oranges) & Likes(X,Apples)))).

fof(a3, axiom,

! [X] : ((Likes(X, Apples) & ~Likes(X, Oranges))|(~Likes(X, Apples) & Likes(X, Oranges)))).

fof(a4, axiom, Likes(John, Apples)).

fof(a5, axiom,

! [y] : (Likes(John, y) => ~ Likes(Mary, y))).

fof(c1, conjecture, Plays(Mary, Go)).