Homework 3

**Page 64 Problem 2**

1. There exists a number x for every number y such that xy=y.
2. For every number x and y, if x >= 0 and y < 0, then x-y > 0.
3. For every number x and y, there exists a number z such that x = y + z.

**Page 65 Problem 10**

1. ∀xF(x,Fred)
2. ∀yF(Evelyn,y)
3. ∀x∃yF(x,y)
4. ¬∃x∀yF(x,y)
5. ∀y∃xF(x,y)
6. ¬∃x[ F(x,Fred) ∧ F(x,Jerry) ]
7. ∃a∃b[ F(Nancy,a) ∧ F(Nancy,b) ∧ a ≠ b ∧ ∀z[ F(Nancy,z) → ( z=a ∨ z = b) ] ]
8. ∃y[ ∀xF(x,y) ∧ ∀z[ F(x,z) → (z=y) ] ]
9. ¬∃xF(x,x)
10. ∃x∃y[ F(x,y) ∧ (x ≠ y) ∧ ∀z[ F(x,z) ∧ (x ≠ z) → (z = y) ] ]