Assignment #3 – Predicate Translations with Quantifiers

UD: All People
Rxy: x respects y
Hxy: x hates y
Bx: x is busy
Cx: x is a Clinton
Dx: x is a dancer
Px: x is a president
Ix: x is an imbecile
Sx: x is a state
Qx: x is a quarterback
b: LeBron James
h: Hillary Clinton
w: Taylor Swift

1. Someone is a president.
2. There exists at least one president who is an imbecile.
3. LeBron James is not a Clinton.
4. Everyone is a dancer
5. Everyone respects Taylor Swift
6. Some dancers are busy
7. If Hillary Clinton is busy, then Taylor Swift loves herself.
8. Some states are not quarterbacks
9. All Clintons are busy dancers.
10. No presidents are dancers
11. No presidents are dancers and there exists at least one dancer which is not a clinton.
12. If Taylor Swift is a quarterback, then all dancers are busy.

Guidelines for quantifiers:

1. You should memorize the A E I O chart.
   A - All F's are G's = (∀x)(Fx ⊃ Gx)
   E - No F's are G's = ~(∃x)(Fx & Gx), (∀x)(Fx ⊃ ~Gx)
   I - Some F's are G's = (∃x)(Fx & Gx)
   O - Some F's are not G's = (∃x)(Fx & ~Gx)

2. Triple Bar. Any time you see "and only" in a translation, it refers to triple bar. So question 16 is setting a necessary and sufficient condition for the types of things which Donald Trump respects.

3. Horseshoe. These are not easy. "All F's are G's" take the form of horseshoe even-though there is no "If" to be found. Remember that sentences of the form "P only if Q" are different than sentences of the form "If P then Q" and "P if Q". The antecedent (first part of the horseshoe) always follows "if" unless the "if" is preceded by "only". So sentences of the form "P only if Q" will translate as P ⊃ Q whereas "P if Q" translates as Q ⊃ P.

4. Identity statements. These statements are used to identify or exclude something in particular. Anytime you see "except", we are talking about exclusion and you will need to mark that out by using the ≠ symbol. Anytime you see "is the only", we are talking about identifying something particular and you will need to mark that out by using the = symbol.

5. You can determine the scope of a sentence by the placement of quantifiers. When you are symbolizing a sentence which is connecting a specific object to a universal set of things then the existential quantifier will always come first (question 12). When you are symbolizing a sentence which is connecting a universal set of things to at least one object, then the existential quantifier will come second (question 11).

6. "If anyone can" is always an existential. "If everyone can" is always a universal.

7. Work from what you know to what you don't know. If you know how to symbolize one part of the sentence but not the other then start from there. Remember, there will always be partial credit given.