Problem Set 3

Phil313Q

Due Sept. 29, 9:30am

For practice problems, see TLB 7.2E (#1-2) & 7.3E (#1-4)

1 Kinds of Formulas in PL

For each of the sentences below, state whether it is atomic, truth-functional, or quantified. If it is truth-functional or quantified, circle the main logical operator.

1. $(\forall w)(M''ww \ \& \ F'w)$
2. $F'a \equiv (\exists x)(F'x \equiv G'x)$
3. $(\forall x)[(\exists y)P''xy \supset P''xs]$
4. $F'a$
5. $(\forall x)F'x \vee (\forall y) \sim F'y$
6. $(\exists x)F'x \ \& \ G'a$
7. $M'a \supset (\exists z)(B''zz)$
8. $(\exists x)(F'x \ \& \ G'a)$
9. $(\forall x)((P''xx \supset \sim P''rx) \ \& \ (\forall y)(M'x \supset P''ry))$
10. $D'''ang$

2 Translations into PL

Translate the following English sentences into sentences of PL using the following symbolization key:

UD: The set of all books and all people
Px: x is a person
Bx: x is a book
Rxy: x reads y
Uxy: x understands y

Lxy: x likes y
g: Green Eggs and Ham
a: Alice in Wonderland
j: Joe Biden

1. Joe Biden likes Green Eggs and Ham.
2. Everyone who reads Alice in Wonderland reads Green Eggs and Ham.
3. If Joe Biden reads Alice in Wonderland, everyone likes him.
4. No one who reads Alice in Wonderland understands it.
5. Joe Biden does not understand himself.
6. If someone understands Alice in Wonderland, then everybody does.
7. Someone likes Green Eggs and Ham.
8. Some people like Green Eggs and Ham but not Alice in Wonderland.
9. It's not the case that Joe Biden likes every book.
10. Everyone who reads either Green Eggs and Ham or Alice in Wonderland likes Joe Biden.

3 Translations into English

Translate the following sentences of PL into sentences of English using the same symbolization key as 2 above.

1. $(\forall x)(Px \supset (Lxj \vee Rxa))$
2. $\sim (\exists y)(By \;\&\; Py)$
3. $(\forall x)((Px \;\&\; Lxx) \supset (\exists y)Lxy)$
4. $\sim (\exists x)(Px \;\&\; (\forall y)(By \supset Uxy))$
5. $Ljg \supset \sim (\exists x)(Px \;\&\; Uxg)$
6. $\sim (\exists x)(Px \;\&\; \sim (\exists y)(By \;\&\; Lxy))$
7. $\sim (\forall z)(Pz \supset (\exists y)(By \;\&\; Uzy))$
8. $Ljj \;\&\; \sim (\exists x)(Px \;\&\; Ujx)$
9. $(\forall x)(Bx \supset Ujx)$
10. $[(\exists x)(Px \;\&\; Lxg) \;\&\; (\exists y)(Py \;\&\; Lya)] \;\&\; \sim (\exists z)(Pz \;\&\; (Lza \;\&\; Lzg))$