

Homework #4

PHIL-205-01:Symbolic Logic

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Consider the following interpretation:

The domain comprises of Maddy, Frege, and Ludwig.

A is a one place predicate, to be true of and only of Maddy.

B is a one place predicate, to be true of only Frege and Ludwig.

C is a one place predicate, to be true of no one.

m refers to Maddy.

f refers to Frege.

l refers to Ludwig.

Determine whether each of the following sentences are true or false, given the above interpretation.

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|----------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|
| 1. Cf | 1. <u>False</u> |
| 2. $Am \vee Bf$ | 2. <u>True</u> |
| 3. $\neg \forall x Cx$ | 3. <u>True</u> |
| 4. $\neg \exists x Cx$ | 4. <u>True</u> |
| 5. $\exists x Ax \wedge \exists x Bx$ | 5. <u>True</u> |
| 6. $\forall x (Ax \vee Cx)$ | 6. <u>False</u> |
| 7. $\forall x (Cx \implies Ax)$ | 7. <u>True</u> |
| 8. $\forall x Bx \iff \exists x (Ax \vee Bx)$ | 8. <u>False</u> |
| 9. $\exists x (Bx \implies Cx)$ | 9. <u>True</u> |
| 10. $\forall x Bx \implies \exists x Ax$ | 10. <u>True</u> |
| 11. $Cm \vee Bm \vee Al$ | 11. <u>False</u> |
| 12. $\exists x (Ax \wedge Bx)$ | 12. <u>False</u> |
| 13. $\exists x (Ax \wedge \forall y (Ay \implies x = y))$ (in English, there is exactly 1 A) | 13. <u>True</u> |
| 14. $\forall x \forall y \forall z [(Bx \wedge By \wedge Bz) \implies (x = y \vee y = z \vee x = z)]$ | 14. <u>True</u> |
| 15. $\exists x \exists y (Cx \wedge Cy \wedge \neg x = y \wedge \forall z (Cz \implies [z = x \vee z = y]))$ (In English, there are exactly 2 C s.) | 15. <u>False</u> |