

Math 2283 - Introduction to Logic

Quiz #14 - 2006.11.15

Solutions

Determine which of the following are valid wffs. You may assume that each predicate is followed by the correct number of variables.

1. $(\neg\forall xAx \Leftrightarrow \exists x\neg Ax)$

valid

2. $\forall x\forall y((Wx \Leftrightarrow Wy) \Rightarrow x = y)$

not valid

3. $((\forall yWy \wedge \forall ySy) \Leftrightarrow \forall y(Wy \wedge Sy))$

valid

4. $(\forall y(Wy \vee Sy) \Rightarrow (\forall yWy \vee \forall ySy))$

not valid

5. $(\forall x(Wx \Rightarrow Mx) \Leftrightarrow \forall x(\neg Wx \vee Mx))$

valid

6. $(\exists y\forall xRxy \Rightarrow \forall x\exists yRxy)$

valid

7. $(\exists x(Hx \wedge Rx) \Rightarrow \exists xHx)$

valid

8. $(\forall y\exists xMxy \Leftrightarrow \forall x\exists yMyx)$

valid

9. $((\exists yWy \vee \exists ySy) \Leftrightarrow \exists y(Wy \vee Sy))$

valid

10. $(\forall x\forall z\forall yHxyz \Leftrightarrow \forall y\forall z\forall xHxyz)$

valid