

Math 2283 - Introduction to Logic

Homework #8 - 2006.10.30

Due Date - 2006.11.06

Solutions

Consider a language with two names, c and d and a predicate $Lxyz$. Define the following structures.

S1:

Domain: $\{0, 1, 2, \dots, 8, 9, 10\}$

c refers to 0 and d refers to 5.

$Lxyz$ is $x + y = z$

S2:

Domain: $\{0, 1, 2, \dots, 8, 9, 10\}$

c refers to 0 and d refers to 5.

$Lxyz$ is $x < y < z$

S3:

Domain: $\{0, 1, 2, \dots, 8, 9, 10\}$

c refers to 0 and d refers to 10.

$Lxyz$ is $x \leq y \leq z$

S4:

Domain: $\{0, 1, 2, \dots, 8, 9, 10\}$

c refers to 0 and d refers to 10.

$Lxyz$ is $x < y < z$

Evaluate the following wff's for each structure.

1. $\exists xLcx d$

S1: True

S2: True

S3: True

S4: True

2. $\forall xLcx d$

S1: False

S2: False

S3: True

S4: False

3. $\forall x\exists yLcxy$

S1: True

S2: False

S3: True

S4: False

4. $\forall x\exists yLxxy$

S1: False

S2: False

S3: True

S4: False