

Math 2283 - Introduction to Logic

Homework #9 - 2006.11.08

Due Date - 2006.11.15

Solutions

Find two structures which makes each of the following wff's false. The first structure should have a domain of only numbers, the second should have a domain with no numbers.

1. $(\exists xFx \Rightarrow (\exists xFx \vee \exists xGx))$

This is a valid wff!

2. $(\forall x(Gx \Rightarrow Fx) \Rightarrow \exists xFx)$

Answers will vary.

3. $(\forall x(Rx \vee Hx) \Rightarrow \exists xHx)$

Answers will vary.

4. $((\exists x(Rx \Rightarrow Hx) \wedge \exists x(Hx \Rightarrow Rx)) \Rightarrow \exists x(Rx \Leftrightarrow Hx))$

You might believe this to be true, however consider the following structure:

$$D = \{0, 1\}$$

Rx is x is even.

Hx is x is odd.

5. $((\forall x(Rx \Rightarrow Hx) \vee \forall x(Hx \Rightarrow Rx)) \Rightarrow \exists x(Rx \Leftrightarrow Hx))$

Answers will vary.