

Math 2283 - Introduction to Logic

Homework #1 - 2006.08.23

Due Date - 2006.09.01

Name: _____

1. Convert the following paragraph to logical expressions using the following predicates and references. It might help to reword certain sentences first.

x refers to Mr. X.

y refers to Dr. Y.

Lcd is “ c looked at d ”

Sc is “ c smiled”

Ac is “ c would be forced to take action”

Hc is “ c would be happy”

Mr. X looked at Dr. Y and smiled. If Dr. Y smiled, then Mr. X would be forced to take action. If Dr. Y did not smile, then Mr. X would not be forced to take action and both Mr. X and Dr. Y would be happy. But if Dr. Y smiled, he would be happy and Mr. X would not be happy. Dr. Y looked at Mr. X and did not smile.

2. If Pxy is “x is taller than y”, and m refers to male and f refers to female, then how do you interpret the following expressions?

a) $\forall m \exists f Pmf$

b) $\exists m \forall f Pmf$

c) $\forall f \exists m Pmf$

d) $\exists f \forall m Pmf$

3. Negate the following statements.

a) Some people like cartoons.

b) Everyone wants to be a rock star.

c) Nobody likes to lose.

d) Someone likes to win.

e) Each player is a winner.