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ECE 369 Homework 1

Proposition and Predicate Logic

Exercise 1.1

Problems:

3. (a) true

3. (b) false

3. (e) true

3. (f) false

8. (a)

8. (c)

8. (f)

13. (a)

13. (c)

13. (d)

Exercise 1.2

Problems

42. 1. hyp

2. hyp

3. hyp

4. hyp

5. C hyp

6. 1, 3, mp

7. S 4, 6,mp

47. 1. hyp

2. hyp

3. hyp

4. 1, 3, hs

5. 4, 2, mt

6. 5, De Morgan’s Law

7. 6, sim

Exercise 1.3

Problems

2. (e) true, if y = 0;

2. (f) true,

2. (h) false, if x = 0;

11. (a)

(b))

(c)

16. (a)

16. (i)

16. (l)

Exercise 1.4

F: Flowers

P: Flowers are purple

R: Flowers are red

PA: Pansies

4. 1. hyp

2. hyp

3. hyp

4. 3, ui

5. 1, ei

6. 2, ei

7. 4, 5, hs

8. 4, 6, hs

9. 7, eg

10. 8, eg

Some pansies are Purple.

Some pansies are red.

PI: Flowers are pink

TH: Flowers have thorns

B: Bad smell.

W: Weed

5. 1. hyp

2. hyp

3. hyp

4. 1, ei

5. 4, sim

6. 2, ui

7. 3, ui

8. 5, 6, mp

9. 7, 8, mp

10. 9, eg

Some flowers smell bad.

9. (a) Let Q (x, y): x talks to y

:

Everybody is talked by someone, but someone can be different person.

:

Someone talks to everyone. Someone should be the same person.

So cannot imply .

(b) The step4 to step5 is wrong.

4. 3, ug

5. 4,eg

The above is the right deduction.

33. 1. hyp

2. hyp

3. hyp

4. 1, ei

5. 4, ui

6. 2, ui

7. 5, 6, hs

8. 6, 7, eg

9. 8, ug

37. 1. hyp

2. hyp

4. 1, ui

5. 4, ei

6. 2, ui

7. 6, ei

8. 7, hs

9. 9, cont

10. 6, hs

11. 9, 10, hs

12. 11, ug

Problem I:

= =

Problem II:

No.

Because not only ignorant people can be vain, suppose good person also can be vain. Then Professor can be good person. So professor can be vain.