Concepts

1. Is the conclusion a numbered line on the proof? What is the significance of this fact?

2. What is the key feature of inference rules that allows them to be used to test arguments for validity (hint: it has to do with *truth*)? Define this feature.

3. Inference rules can't be used on part of a line. What does this mean? Give an example of what it would mean to try to use a rule on part of a line.

4. The rule of DI seems like magic. For example, it lets you derive 'Z v (P • ~P)' even if all you have to start with is 'Z' — the disjunct 'P • ~P' looks like it just got pulled out of a hat. Why is this OK?

5. Suppose you have ~P on one line, and ~Q on another, like this:

    1. ~P
    2. ~Q

    And you combine them with the rule of conjunction, like this:

    3. ~P • ~Q 1, 2 conj

    Would it be OK to have combined them like this:

    3. ~(P • Q) 1, 2 conj

Proofs (easy):

6.

    1. B
    2. B ⊃ D / ∴ D

7.

    1. ~Z
    2. ~Z ⊃ (M • S) / ∴ M • S

8.

1. A ⊃ ~C
2. A
3. ~C ⊃ D / ∴ D

9.

1. G ⊃ H
2. ~H / ∴ ~G

10.

1. V
2. ~A ⊃ ~V / ∴ A

11.

1. G ⊃ (H ⊃ K)
2. G
3. ~K / ∴ ~H

12.

1. X v Y
2. ~X / ∴ Y

13.

1. Y v (A ≡ H)
2. ~(A ≡ H) / ∴ Y

14.

1. R ⊃ S
2. ~S
3. R v M
4. M ⊃ N / ∴ N

15.

1. B ⊃ C
2. C ⊃ D / ∴ B ⊃ D

16.

1. ~(G ⊃ K) ⊃ (L ⊃ D)
2. R ⊃ ~(G ⊃ K) / ∴ R ⊃ (L ⊃ D)

17.

1. (E ⊃ D) v J
2. D ⊃ ~R
3. ~J
4. E / ∴ ~R

18.

1. S • (O v K) / ∴ O v K

19.

1. K
2. S ≡ S / ∴ K • (S ≡ S)

20.

1. (X ⊃ ~D) • ~K
2. Y ⊃ K
3. D v Y / ∴ ~X

21.

1. G / ∴ G v (Z ≡ ~Z)

22.

1. ~A
2. (~A v C) ⊃ B / ∴ B

23.

1. B • C
2. B ⊃ D / ∴ K v D

24.

1. M ⊃ N
2. A ⊃ B
3. A v M / ∴ N v B

25.

1. S v S
2. S ⊃ J
3. S ⊃ X / ∴ J v X

26.

1. H ⊃ K
2. M
3. M ⊃ W / W v K

Proofs (medium):

27.

1. (R ⊃ X) • [(C v J) ⊃ G)
2. C v J / ∴ G v X

28.

1. R ⊃ (R • M)
2. N ⊃ R / ∴ [N ⊃ (R • M)] • (N ⊃ R)

29.

1. N
2. R ⊃ (M • A)

3. N ⊃ R / ∴ M

30.

1. R ⊃ (~M • N)
2. Y v M
3. N ⊃ A
4. R / ∴ A • Y

31.

1. G v ~C
2. (X v C) ⊃ ~G
3. X / ∴ ~C v M

32.

1. ~R
2. (A v D) ⊃ N
3. R v A
4. (N v R) ⊃ X / ∴ X

33.

1. (M v N) ⊃ A
2. R
3. (R v Y) ⊃ (M • N) / ∴ A

34.

1. R v M
2. (M • ~N) ⊃ (A • ~N)
3. N ⊃ R
4. ~R / ∴ A

35.

1. M ⊃ R
2. (~R • ~M) ⊃ (N ⊃ M)
3. ~R / ∴ ~N

36.

1. B ⊃ (K ⊃ G)
2. B
3. Z ⊃ (G ⊃ Y)
4. Z / ∴ K ⊃ Y

37.

1. ~W
2. ~W ⊃ [~R ⊃ (A ⊃ R)]
3. W v ~R / ∴ ~A

38.

1. (B ⊃ C) ⊃ (E ⊃ B)
2. B v E
3. (B v E) ⊃ (B ⊃ C) / ∴ C v B

39.

1. ~B
2. (~H v I) ⊃ (B v G)
3. H ⊃ B / ∴ G

40.

1. A • H
2. K ⊃ ~A
3. (A v Y) ⊃ (K • O) / ∴ E

Proofs (more challenging)

41.

1. (N ⊃ K) • (A ⊃ Q)
2. (R ⊃ I) • (F ⊃ N)
3. A
4. Q ⊃ T / ∴ K v T

42.

1. (~I v T) ⊃ A
2. ~T
3. I ⊃ T
4. A ⊃ (~M v S)
5. ~S • (M v F) / ∴ (A v P) • ~M

43.

1. C ⊃ (~B v ~E)
2. ~C ⊃ (~E • ~D)
3. ~(~B v ~E)
4. P v C / ∴ (~E • ~D) • P

44.

1. [~R • ~(A • Y)] ⊃ (M ⊃ ~A)
2. ~(A • Y) • ~C
3. Y ⊃ H
4. ~R v (A • Y)
5. ~(A • Y) ⊃ (M v Y) / ∴ ~A v H

45.

1. (R • M) ⊃ (N v A)
2. N ⊃ Y
3. R ⊃ M
4. R • H
5. (A ⊃ K) • O / ∴ (R • M) • (Y v K)

46.

1. R ⊃ M
2. N v R
3. N ⊃ A
4. ~A / ∴ (M • ~N) v Y

47.

1. C • (J ⊃ F)
2. F ⊃ W
3. J v ~C
4. F v ~(F v W) / ∴ F

48.

1. (A ≡ F) ⊃ (~A v E)
2. ~F • ~(A ≡ F)
3. E ⊃ F
4. A ⊃ ~E
5. (A ⊃ F) • F / ∴ E ⊃ (A ≡ F)

49.

1. (R v M) ⊃ [(Y ⊃ K) • (W ⊃ Z)]
2. (R v Y) ⊃ (Y v W)
3. R • M / ∴ K v Z

50.

1. ~R • M
2. ~R • (W v ~R)
3. (W ⊃ J) • (~R ⊃ ~O)
4. (J ⊃ R) • (~O ⊃ ~P) / ∴ ~P