(科目: 离散) 数 学 作 业 纸

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了

 T_1 (3) $(\forall x)$ ($P(x) \lor 9$) \longrightarrow ($\exists x$) ($P(x) \land 9$) = \neg ($(\forall x) \land (P(x) \lor 9)$) \lor ($(\exists x) \land (P(x) \land 9)$)

= ((3x) 7 (PCX) V 91) V ((3x) P(X) A) = ((3x) (7PEX) N 91) V ((3x) PCX) A)

= $(C \exists x) \neg P(x) \wedge \neg 9) \vee (C \exists x) P(x) \wedge 9)$

(4). $(\forall y) (\exists x) (CP(x) \rightarrow 2) VS(y) = (\exists x) (P(x) \rightarrow 2) V(\forall y) \bullet S(y)$

 $= (\exists x) (\neg P(x) \lor 9) \lor (\forall 4) S(4) = (\exists (x) \neg P(x) \lor 9) \lor (\forall 4) \bullet S(4)$

= (7(4x) Pcx) v9) V(44) S(4) = ((4x) Pcx) -> 9) V(44) S(4).

(2). $(\forall x) p(x) \rightarrow 3 = \neg (\forall x) p(x) \land 3 = (\exists x) (\neg b(x) \land 3) = (\exists x) (\neg b(x) \land 3) = (\exists x) (\neg b(x) \rightarrow 3)$

(6). (∃x)(pcx)→Qcx1) = (∃x) (¬pcx) v (Qcx) = (∃x) ¬pcx) v (∃x) Qcx)

= 7 (4x) PCX) V(=x)QCX) = (4x) PCX) -> (=x) (QCX).

- (8). $(\exists x) b(x) V(Ax) O(x) = \exists x) b(x) V(Ax) O(x) = (\exists x) b(x) V(AA) O(x)$ $\Rightarrow (Ax) (\exists x) b(x) V(Ax) O(x) = (\exists x) b(x) V(Ax) O(x) = (\exists x) b(x) V(AA) O(x)$ $\Rightarrow (Ax) (\exists x) b(x) V(Ax) O(x) = (\exists x) b(x) V(Ax) O(x) = (\exists x) b(x) V(AA) O(x)$
- (8). $(\exists x) P(x) N(\forall x) Q(x) = (\exists x) P(x) N(\forall y) Q(x))$ $\Rightarrow (\exists x) P(x) N(\forall x) Q(x) = (\exists x) P(x) N(\forall y) Q(y)$
- C91. (CAXIDCX) V(AXIOCX) V(EXISCXI) A (CAXIDCX) V(EXIZCXI)
 - = (CAX) b(x) V (AX) (D(X)) V (CEX) b(X) \ (S(X))
 - = (XX) (PCX) (QCX)) (XEX) (PCX) (XCX))

To (1) 不是普遍有效. 可在 {1,2} 域上分析. 若 P(1)=T, P(2)=Q(1)=Q(2)=F (1)(3x)(P(x) \leftrightarrow Q(x))为 T, ((3x)P(x) \leftrightarrow (3x)(Q(x))为 F.

- (2) 不是普遍有的效
- (3)普遍有效
- (4) 是普遍有效.
- (5)普遍有效.

69

 $(C \exists x) P c x) \rightarrow (\exists x) Q c x) \rightarrow (\exists x) (P c x) \rightarrow Q c x)$

 $= (\neg (\exists x) P(x) \lor (\exists x) Q(x)) \rightarrow (\exists x) (\neg P(x) \lor Q(x))$

= $\neg (\neg (\exists x) P(x) \lor (\exists x) Q(x)) \lor (\exists x) \neg P(x) \lor (\exists x) Q(x)$

- = ((3x) $P(x) \wedge \neg (3x) \otimes (x)$) $\vee (3x) \neg P(x) \vee (3x) \otimes (x)$
- = (((x))((xE) V (x)) ((x)) ((x)) ((x)) ((x))
- = $\neg (\exists x) \circ (x) \lor (\exists x) \neg (x) \lor (\exists x) \circ (x) = T \lor (\exists x) \neg (x) = T.$

(6) 視普遍有效 (7) 視普遍有效 (8) 視普遍有效