

22.11.18

作业

p.560(p.185)

17. (1), (2), (3)

18. (1), (3)

19. (2),(3)

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$$17. (1) \forall x_1 F_1(x_1, x_2) \wedge \forall x_2 F_1(x_1, x_2) \\ \vdash \forall x_3 F_1(x_3, x_2) \wedge \forall x_4 F_1(x_1, x_4) \\ \vdash \forall x_3 x_4 (F_1(x_3, x_2) \wedge F_1(x_1, x_4))$$

$$(2) \forall x_2 F_1(x_1) \rightarrow \exists x_1 F_1(x_2)$$

$$\vdash \forall x_3 F_1(x_1) \rightarrow \exists x_4 F_1(x_2)$$

$$\vdash \exists x_3 x_4 (F_1(x_1) \rightarrow F_1(x_2))$$

$$(3) \forall x_1 \forall x_2 F_1(x_1, x_2) \rightarrow \forall x_1 \forall x_2 F_1(x_1, x_2)$$

$$\vdash \forall x_1 \forall x_2 F_1(x_1, x_2) \rightarrow \forall x_3 \forall x_4 F_1(x_3, x_4)$$

$$\vdash \exists x_1 x_2 \forall x_3 x_4 (F_1(x_1, x_2) \rightarrow F_1(x_3, x_4))$$

$$18. (1) \exists x_1 \exists x_2 F_1(x_1, x_2)$$

$$\vdash \forall x_3 \exists x_1 \exists x_2 F_1(x_1, x_2)$$

$$(3) \exists x_1 F_1(x_1) \rightarrow \exists x_2 F_1(x_2)$$

$$\vdash \forall x_1 \exists x_2 (F_1(x_1) \rightarrow F_1(x_2))$$

$$19. (2) \exists x_1 F_1(x_1) \rightarrow \forall x_1 \exists x_2 F_1(x_1, x_2)$$

$$\vdash \exists x_1 F_1(x_1) \rightarrow \forall x_3 \exists x_2 F_1(x_3, x_2)$$

$$\vdash \exists x_2 \forall x_1 x_3 (F_1(x_1) \rightarrow F_1(x_3, x_2))$$

$$(3) \forall x_1 x_2 F_1(x_1, x_2) \wedge \forall x_2 F_1(x_1, x_2)$$

$$\vdash \forall x_4 x_2 F_1(x_4, x_2) \wedge \forall x_3 F_1(x_1, x_3)$$

$$\vdash \exists x_5 \forall x_6 x_7 x_8 (F_1(x_6, x_7) \wedge F_1(x_1, x_8))$$

