

Exercises 1

张逸松

September 16, 2019

5.4

- a) Abdallah Hussein didn't like Japanese.
- b) There is a student who likes Korean, and all students like Mexican.
- c) There is a cuisine y either Monique Arsenault or Jay Johnson likes it.
- d) There are no two people, they like the same cuisines.
- e) For any cuisine y , there are two students x and z , x likes y if and only if z like y .
- f) There is a cuisine y , for any two students x and z , x likes y if and only if z like y .

5.16

- a) $\exists x \forall y \exists z \neg T(x, y, z)$
- b) $\exists x \forall y (\neg P(x, y) \wedge \neg Q(x, y))$
- c) $\exists x \forall y (\neg P(x, y) \vee \forall z \neg R(x, y, z))$
- d) $\exists x \forall y (P(x, y) \wedge \neg Q(x, y))$

5.17

- a) $\exists x \exists y \neg P(x, y)$
- b) $\exists y \forall x \neg P(x, y)$
- c) $\exists x \exists y (\neg P(x, y) \wedge \neg Q(x, y))$
- d) $\forall x \forall y P(x, y) \vee \exists x \exists y \neg Q(x, y)$
- e) $\exists x (\forall y \exists z \neg P(x, y, z) \vee \forall z \exists y \neg P(x, y, z))$