CS 2102 - DMT1 - Fall 2019 — Luther Tychonievich
Practice exercise in class friday september 20, 2019

Practice 03

problem 1 *Symbolizing*

For each of the following, convert from text to symbolic logic. Some are known, named truths (we included the name for fun); others are false. The first one is done for you.

Celarent No G are F. All H are G. So: No H are F

$\nexists x \,.\, G(x) \wedge F(x)$ *or* $\forall x \,.\, G(x) \to \neg F(x)$, *or* $\forall x \,.\, \neg\Big(G(x) \wedge F(x)\Big)$, *or equivalent*

$\forall x \,.\, H(x) \to G(x)$ *or equivalent*

$\therefore \quad \nexists x \,.\, H(x) \wedge F(x)$ *or equivalent*

Barbara All G are F. All H are G. So: All H are F

Ferio No G are F. Some H is G. So: Some H is not F

(false) All G are F. No H is not G. So: Some H is not F

Want more practice? Try Practice exercises $\forall x$ 22.A (pages 187–188)

PROBLEM 2 *Symbolizing with a Key*

Using this symbolization key:

domain: all animals
$A(x)$: $\_\_\_\__x$ is an alligator
$M(x)$: $\_\_\_\__x$ is a monkey
$Z(x)$: $\_\_\_\__x$ lives at the zoo
$L(x,y)$: $\_\_\_\__x$ loves $\_\_\_\__y$
a: Artist
b: Bouncer
c: Champion

Symbolize each of the following sentences; the first one is done for you.

If both Bouncer and Champion are alligators, then Artist loves them both.

$\big(A(b) \wedge A(c)\big) \rightarrow \big(L(a,b) \wedge L(a,c)\big)$

Any animal that lives at the zoo is either a monkey or an alligator.

Champion loves a monkey.

All the monkeys that Artist loves love Artist.

Everyone Bouncer loves loves some animal other than Bouncer.

Every animal in the zoo's love is outside the zoo, and vice versa.

Want more practice? Try Practice exercises $\forall x$ 22.B (page 188) and $\forall x$ 23.A–F (pages 199–203).