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Individual Assignments #58

Assignment: Section 1.3: 6, 8, 10, 12, 16, 24

Q6

a) There exists a student who has visited North Dakota.
b) All the students have visited North Dakota.
c) There is not a student who has visited North Dakota.
d) There is at least one student who has not visited North Dakota.
e) It is not that case that every student has visited North Dakota.
f) Every student has not visited North Dakota.

Q8

a) All rabbits hop.
b) Every animal is a rabbit and it hops.
c) There exists an animal, which, if that animal is a rabbit then it hops.
d) There exists at least one animal that is a rabbit that hops.

Q10

a) $\exists x\,(C(x) \wedge D(x) \wedge F(x))$
b) $\forall x\,(C(x) \wedge D(x) \wedge F(x))$
c) $\exists x\,(C(x) \wedge F(x) \wedge \neg D(x))$
d) $\neg\forall x\,(C(x) \wedge D(x) \wedge F(x))$
e) $\exists x\, C(x) \wedge \exists x\, D(x) \wedge \exists x\, F(x)$

Q12

a) True
b) True
c) False
d) True
e) False
f) True
g) False

Q16

a) True
b) False
c) True
d) False

Q24

For these problems let C(x) be the predicate “x is a student in the class”.

a) Domain 1: $\forall x$ HasPhone(x)
   Domain 2: $\forall x$ (C(x) $\rightarrow$ HasPhone(x))
b) Domain 1: $\exists x$ SawMovie(x)
   Domain 2: $\exists x$ (C(x) $\wedge$ SawMovie(x))
c) Domain 1: $\exists x$ CantSwim(x)
   Domain 2: $\exists x$ (C(x) $\wedge$ CantSwim(x))
d) Domain 1: $\forall x$ SolveQuad(x)
   Domain 2: $\forall x$ (C(x) $\rightarrow$ SolveQuad(x))
e) Domain 1: $\exists x$ $\neg$WantRich(x)
   Domain 2: $\exists x$ (C(x) $\wedge$ $\neg$WantRich(x))