3.3

11) A) S= The set of students at your school
M= The set of movies that have ever been released
V(S,M) Students s has seen movie m
There is a student at your school who has seen Casablanca
D) There is a movie that all students have seen

15) For every / There Exist
$\forall$ odd INT N, $\exists$ an INT K such that $n=2k+1$
For every odd INT There Exist a second INT such that twice the second plus one equals that odd INT
$\sim$($\forall$ odd INT N, $\exists$ an INT K such that $n=2k+1$)
$\sim(\forall x$ in D, $\exists y$ in E such that $P(x,y)) \equiv$
$\exists x \in D$ such that $\forall y \in E, \sim P(x,y)$
$\exists$ an odd INT n such that $\forall$ INT K, $n \neq 2k+1$
There is an odd INT that doesn't equal two times an INT plus one
True

22) A) For every real number, there Exist another real number such that the sum of these two numbers equal 0
B) There exist a real number such that when we add any other real number, the sum equals 0

40) c) False No 1 number is possible for all y values
d) True Can't divide by 0
e) False $x=0$
f) False $-2 \notin Z^+$
g) True $z=x-y$
h) True If $0<u<1$ then $\forall v \in R^+$ $uv<v$

3.4 $\forall x \quad P(x) \Rightarrow Q(x)$

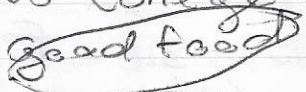
16) If a number is even then twice that number is even $Q(a)$ for a particular a
The particular number $2n$ is even,
For a particular number n
∴ The particular number n is even
$P(a)$ for particular a

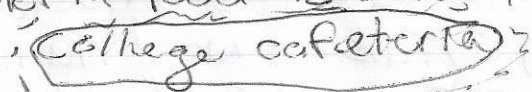
Invalid

19) B) No good car is cheap
A Simbara is not cheap
∴ A Simbara is a good car
∀ cars, if car is good then car isn't cheap
$\forall x$, if $P(x) \rightarrow \sim Q(x)$
A Simbara isn't cheap
$\sim Q(a)$ for particular a
∴ A Simbara is a good car
$P(a)$ for particular a
Let $R(x) = \sim Q(x)$ $R(a) = \sim Q(a)$
$\forall x$ if $P(x) \rightarrow R(x)$
$\sim R(a)$ for particular a
∴ $P(a)$ for particular a

25) No college cafeteria food is good (Solid)
No good food is wasted (Trash)
∴ No college cafeteria food is wasted

invalid





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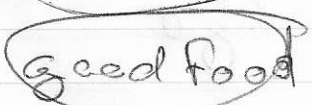

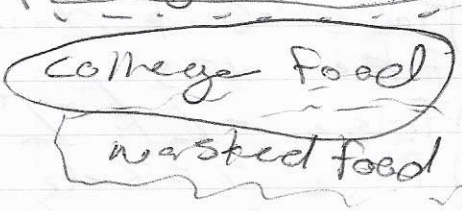

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