



TOPIC:10.- Problems on Predicate Calculus

① Give the symbolic form of the statement,  
"Every book with a blue cover is a Maths book."  
For all  $x$ , if  $x$  is a book with blue cover, then  
 $x$  is a Maths book.

$$(\forall x) : (B(x) \rightarrow M(x))$$

where  $B(x)$  :  $x$  is a book with blue cover  
 $M(x)$  :  $x$  is a Maths book.

② Let  $P(x)$  :  $x$  is a person  
 $T(x)$  :  $x$  trusts others  
 $R(x)$  :  $x$  is rewarded  
 $G(x)$  :  $x$  is Good  
 $Q(x)$  :  $x$  is teasing

Symbolize the following statements :

- Some people who trust others are rewarded.
- If any one is good then John is good.
- Some one is teasing.



a) Statement (a) can be restated as

"There exists an  $x$ ,  $x$  is a person,  $x$  trusts others and  $x$  is rewarded"

$\therefore$  Its symbolic form is  $(\exists x)(P(x) \wedge T(x) \wedge R(x))$

b) Statement (b) can be restated as

"If there exists one  $x$ ,  $x$  is a person and  $x$  is good, then John is good."

$\therefore$  Its symbolic form is  $(\exists x)((P(x) \wedge G(x)) \rightarrow G(j))$

where  $G(j)$ : John is good.

(c) Statement (c) can be restated as

"There is one  $x$ ,  $x$  is a person and  $x$  is teasing"

$\therefore$  Its symbolic form is  $(\exists x)(P(x) \wedge Q(x))$



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