Today: Canvas Worksheet

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1-2

1. Write the truth table for the Boolean function Maj_3, which takes 3 arguments and returns true if at least two of its arguments are true and returns false if at least two of its arguments are false.

P	Q	R	$Maj_3(P,Q,R)$
T	T	T	T
T	T	F	T
T	F	T	T
T	F	F	F
F	T	T	T
F	T	F	F
F	F	T	F
F	F	F	F

2. Use your truth tab
the same idea to w

(P

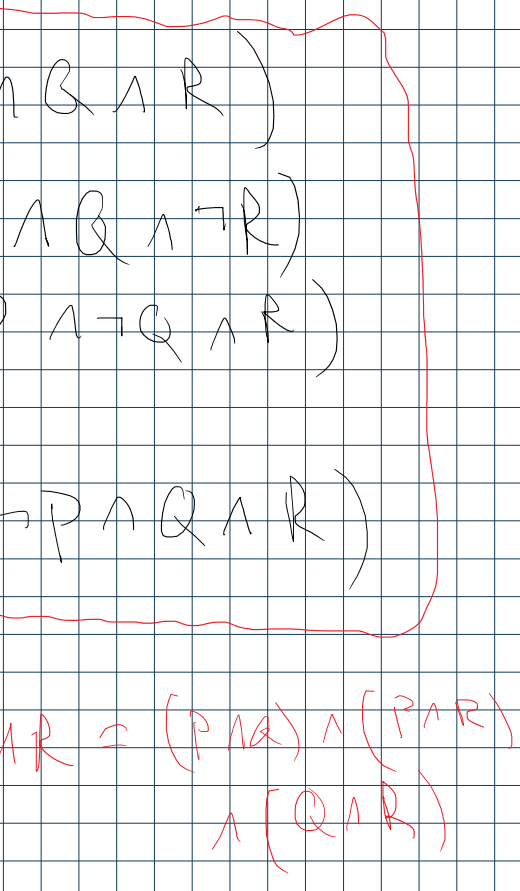
V (P

V (

V (

P ∧ Q

le from the previous problem to write Maj_3 using only $\wedge$, $\vee$ and $\neg$. Use rite $\implies$ using only $\wedge$, $\vee$ and $\neg$.



4. Let $A = \{1, 2, \{3, 4\}\}$. Which of the following are true and which are false?

(a) $1 \in A$.

(b) $\{1\} \in A$.

(c) $3 \in A$.

(d) $\{3\} \in A$.

(e) $\{3\} \subseteq A$.

a) " 1 is an element

T

b) " $\{1\}$ is an

" the set containing

$1 \neq \{1\}$

c) the set A has three elements

1, 2, $\{3, 4\}$

The number 3 isn't any of th

Similarly $\{3, 4\} \notin A$ ($\{3, 4\} \subseteq A$

R

$\{\{3, 4\}\} \subseteq A$? True

Since $\{3, 4\} \in A$

$\in A''$

elt. $\in A''$

Y is an elmt $\in A''$

ere $\Rightarrow \exists \in A$

$\forall$ every elt $\in$

$\in$ is an elt $\in A$)