Fourth Problem Set

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Problem 1

$B \models C$ just in case $\models (B \to C)$
just in case $\bar{v}(B \to C) = T$
just in case
$\bar{v}(B) = T$ and $\bar{v}(C) = T$
or
$\bar{v}(B) = F$ and $\bar{v}(C) = T$
or
$\bar{v}(B) = F$ and $\bar{v}(C) = F$
In the second two cases, $\bar{v}(B) = F$ which means $\bar{v}(\neg B) = T$
Hence $\models \neg B$
In the first two cases $\bar{v}(C) = T$ which means $\models C$
So in all three cases $\models \neg b$ or $\models C$.

Problem 2

(a)

$(x \wedge y \wedge \neg z) \vee (x \wedge \neg y \wedge z) \vee (\neg x \wedge y \wedge z) \vee (\neg x \wedge y \wedge \neg z) \vee (\neg x \wedge \neg y \wedge \neg z)$

(b)

$\neg(x \wedge y \wedge z) \wedge \neg(x \wedge \neg y \wedge \neg z) \wedge \neg(\neg x \wedge \neg y \wedge z)$
$\Rightarrow (\neg x \vee \neg y \vee \neg z) \wedge (\neg x \vee \neg y \vee z) \wedge (x \vee y \vee \neg z)$