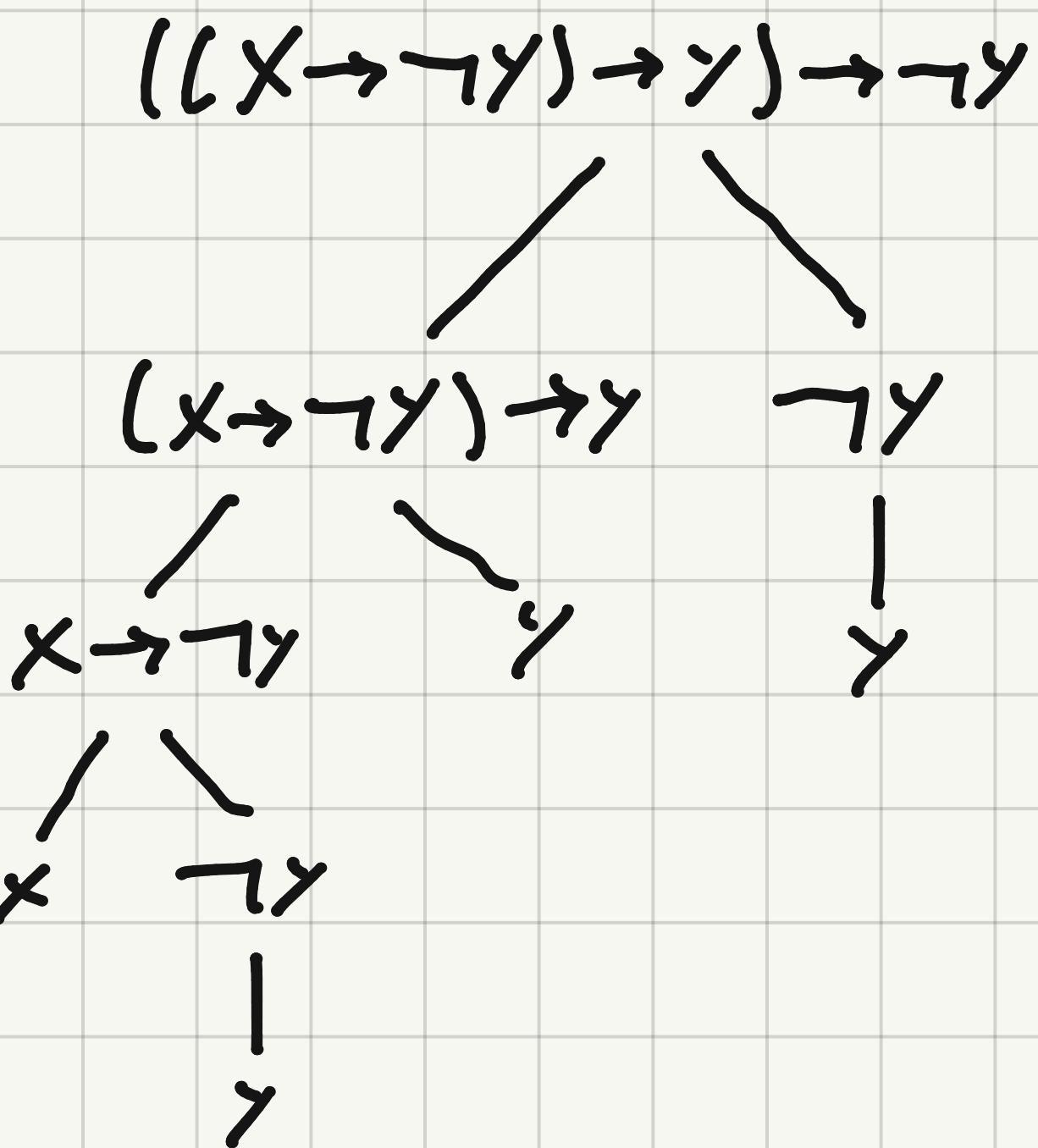


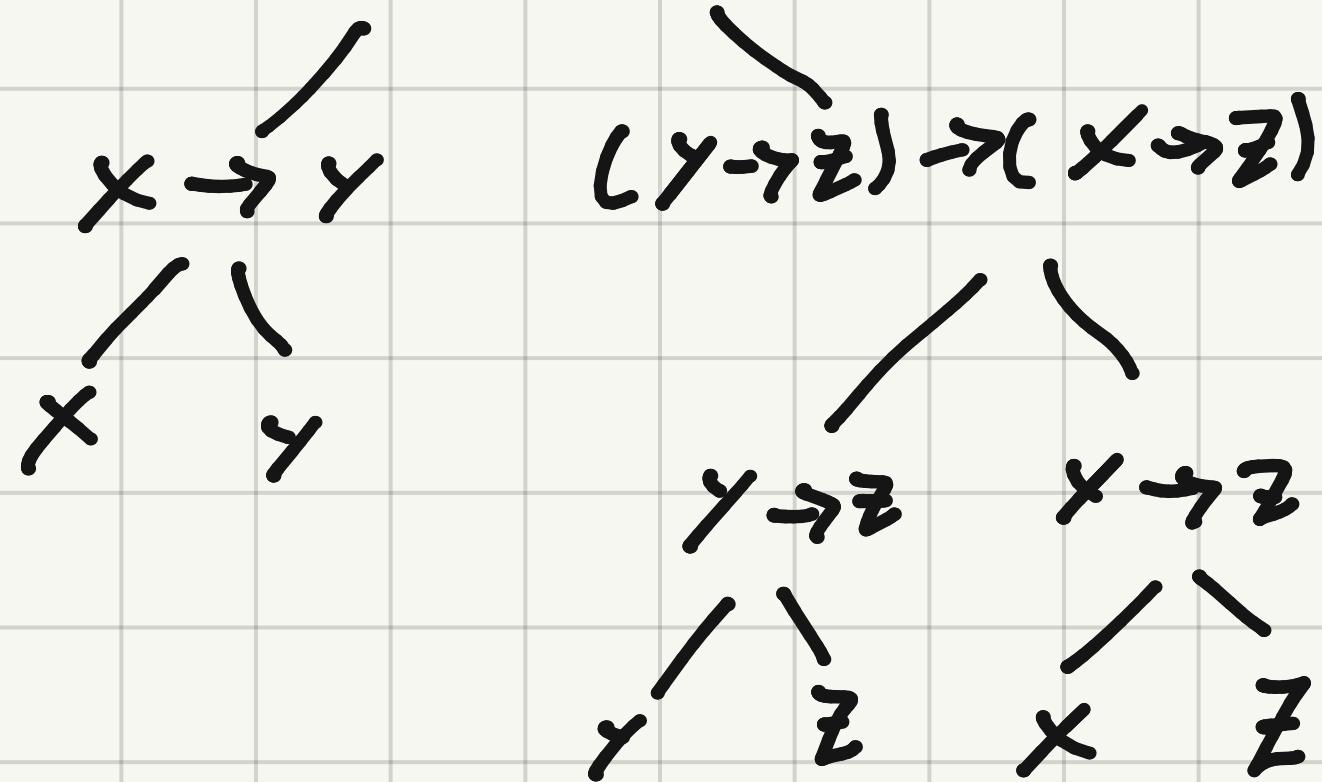
b) $((X \rightarrow \neg Y) \rightarrow Y) \rightarrow \neg Y$



X	Y	$\neg Y$	$X \rightarrow \neg Y$	$(X \rightarrow \neg Y) \rightarrow Y$	$((X \rightarrow \neg Y) \rightarrow Y) \rightarrow \neg Y$
0	0	1	1	0	1
0	1	0	1	1	0
1	0	1	1	0	1
1	1	0	0	1	0

$$C) (x \rightarrow y) \rightarrow ((y \rightarrow z) \rightarrow (x \rightarrow z))$$

$$(x \rightarrow y) \rightarrow ((y \rightarrow z) \rightarrow (x \rightarrow z))$$



DETERMINE WHETHER THE FOLLOWING SETS OF FORMULAS ARE SATISFIABLE

A SET OF FORMULAS IS SATISFIABLE WHEN THERE IS A VALUATION THAT

SATISFIES ALL THE FORMULAS AND UNSATISFIABLE IF THERE IS AT LEAST A

VALUATION α | $\llbracket \{\varphi\} \rrbracket(\alpha) = 0$

a) $\{x \wedge (\neg y \rightarrow x), x \rightarrow (\neg y \rightarrow \neg x)\}$

x	y	$\neg y$	$\neg y \rightarrow x$	φ_1	$\neg x$	$\neg y \rightarrow \neg x$	φ_2
0	0	1	0	0	1	1	1
0	1	0	1	0	1	1	1
1	0	1	1	1	0	0	0
1	1	0	1	1	0	1	1

SATISFIABLE FOR $v(x)=1, v(y)=1$

b) $\{(\neg x \vee y) \rightarrow (x \vee \neg y), (x \rightarrow y) \rightarrow x, x \rightarrow \neg(y \rightarrow x)\}$

x	y	$\neg x$	$\neg y$	$(\neg x \vee y) \rightarrow (x \vee \neg y)$	$(x \rightarrow y) \rightarrow x$	φ_1	$x \rightarrow y$	φ_2	$y \rightarrow x \rightarrow (\neg y \rightarrow x)$	φ_3
0	0	1	1	1	1	1	1	0	1	0
0	1	1	0	0	0	0	1	0	0	1
1	0	0	1	1	1	1	0	1	1	0
1	1	0	0	1	1	1	1	1	1	0

UNSATISFIABLE