Sheffer Stroke Consider the following truth table definition for a logical connective called the *Sheffer Stroke*:

X	Y	$X\|Y$
t	t	f
t	f	f
f	t	f
f	f	t

1. Using a truth table, translate $X|Y$ into our regular SL by finding a logical equivalence.
2. Based on the logical equivalence you have proven, using logical laws, deduce that $(X|Y)|(X|Y) \equiv X \vee Y$
3. Provide the tree rules for $X|Y$ and $X|X$.
4. Using the tree rules you just invented, prove that $X|X \equiv \neg X$

Proofs with SL Trees Verify if the following relations hold using trees. (They are necessarily true.)

1. $I \to (J \to K) \vDash (I \to J) \to K$
2. $(H \leftrightarrow \neg Q) \leftrightarrow (H \leftrightarrow \neg M) \vDash H \to [Q \vee \neg(\neg Q \wedge M)]$
3. $\vDash \neg(A \wedge B) \leftrightarrow (\neg A \vee \neg B)$
4. $\vDash [H \to (O \to N)] \to [(H \wedge O) \to N]$
5. $A \to \neg A \equiv \neg A$
6. $(D \wedge N) \to J \equiv D \to (N \to J)$