Assignments from Fall 2017

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Part I

Chapter 1

A.1

1.1 A.1.1 A curious proposition

1.

P	Q	$P \to Q$	$(P \to Q) \to P$	$((P \to Q) \to P) \to Q$
0	0	1	0	1
0	1	1	0	1
1	0	0	1	0
1	1	1	1	1

2.

$$\begin{aligned}
((P \to Q) \to P) \to Q &\equiv \neg(\neg(\neg P \vee Q) \vee P) \vee Q \\
&\equiv (\neg(P \wedge \neg Q) \wedge \neg P) \vee Q \\
&\equiv ((\neg P \vee Q) \wedge \neg P) \vee Q \\
&\equiv ((\neg P \wedge \neg P) \vee (Q \wedge \neg P)) \vee Q \\
&\equiv \neg P \vee Q \vee (Q \wedge \neg P) \\
&\equiv \neg P \vee Q \vee \neg(\neg Q \vee P)
\end{aligned}$$