Exercise 1

A	B	$A \to B$	$\neg A \vee B$	$\neg(A \wedge \neg B)$
0	0	1	1	1
0	1	1	1	1
1	0	0	0	0
1	1	1	1	1

Exercise 2

A	B	C	$A \to B$	$B \wedge C \to A$	$(A \to B) \wedge (B \wedge C \to A)$
0	0	0	1	1	1
0	1	0	1	1	1
1	0	0	0	1	0
1	1	0	1	1	1
0	0	1	1	1	1
0	1	1	1	0	0
1	0	1	0	1	0
1	1	1	1	1	1

Exercise 3

A	B	$A \to B$	$\neg B \to \neg A$
0	0	1	1
0	1	1	1
1	0	0	0
1	1	1	1

Exercise 4

A	B	C	$A \to B \vee C$	$\neg B \to \neg C$	$A \to B$
0	0	0	1	1	1
0	1	0	1	1	1
1	0	0	0	1	0
1	1	0	1	1	1
0	0	1	1	0	1
0	1	1	1	1	1
1	0	1	1	0	0
1	1	1	1	1	1

A	B	C	$A \to B \vee C$	$\neg B \to \neg C$	$A \to B$
0	0	0	1	1	1
0	1	0	1	1	1
1	1	0	1	1	1
0	1	1	1	1	1
1	1	1	1	1	1

$\therefore \{A \to B \vee C, \neg B \to \neg C\} \vDash A \to B$

Exercise 5
2: $(\neg A \to \neg B) \to (A \to B) = 0$ when $A = 1, B = 0$
3: $((P \wedge Q) \to R) \to (R \vee \neg P) = 0$ when $P = 1, Q = 0, R = 0$