Mini Assignment 2 u5589395

5.1 $x \vee x \wedge y = x$

$x \wedge y$ means that it must be an element of x and y

$x \vee x \wedge y$ means that it must be an element of x or x and y

an element of $x \wedge y$ is always an element of x. Therefore $x \vee x \wedge y = x$

2. $x \vee x \wedge y = x \vee (x \wedge y)$ (Associativity)

$x \vee (x \wedge y) = x$ (law of absorption)

6.1

1	$(p \vee q) \rightarrow q$	(A)
2	$\quad p$	(A)
3	$\quad p \vee q$	($\vee$-I, 1)
4	$\quad q$	($\rightarrow$-E, 1, 3)
5	$\quad p \wedge q$	($\wedge$-I, 2, 4)
6	$p \rightarrow (p \wedge q)$	($\rightarrow$ I, 1-4)

2.

1	$(p \rightarrow q) \wedge (p \rightarrow r)$	(A)
2	$\quad p$	(A)
3	$\quad p \rightarrow q$	($\wedge$-E, 1)
4	$\quad p \rightarrow r$	($\wedge$-E 1, 2)
5	$\quad q$	($\rightarrow$-E 2, 3)
6	$\quad r$	($\rightarrow$-E, 2, 4)
7	$\quad q \wedge r$	($\wedge$-I, 5, 6)
8	$\quad p \rightarrow q \wedge r$	($\rightarrow$ I 2, 7)
9	$((p \rightarrow q) \wedge (p \rightarrow r)) \rightarrow (p \rightarrow (q \wedge r))$	($\rightarrow$-I 1, 8)

7.1

1	$p \vee q$	(A)
2	$\quad \neg p$	(A)
3	$\quad\quad p$	(A)
4	$\quad\quad F.$	($\rightarrow$-E 2, 3)
5	$\quad\quad q$	($\rightarrow$ E, 4)
6	$\quad\quad p \rightarrow q$	($\rightarrow$ I, 3, 5)
7	$\quad\quad q$	(A)
8	$\quad\quad q \rightarrow q$	($\rightarrow$I, 7, 7)
9	$\quad\quad q$	($\vee$E, 1, 6, 8)
10	$\quad \neg p \rightarrow q$	($\rightarrow$ I 2, 9)
11	$(p \vee q) \rightarrow (\neg p \rightarrow q)$	($\rightarrow$I, 1, 10)