HOMEWORK #1 SOLUTIONS

1.

a) It's just not true that if Jane Austen wrote a book (W) then it has a happy ending (H).
$-(W \rightarrow H)$

b) Hegel was neither a great philosopher (P) nor a great historian (H).
$-P \,\&\, -H$

c) Sieglinde will survive (S), and either her son will gain the Ring (G) and Wotan's plan will be fulfilled (F) or else Valhalla will be destroyed (D).
$S \,\&\, ((G \,\&\, F) \vee D)$

d) Wotan (W) and Alberic (A) will not both be satisfied
$-(W \,\&\, A)$

2.

a)

(1)	$P \rightarrow (Q \rightarrow R)$	A
(2)	$P \rightarrow Q$	A
(3)	P	A // R
(4)	$Q \rightarrow R$	1, 3 MPP
(5)	Q	2, 3 MPP
(6)	R	4, 5 MPP

b)

(1)	$--Q \rightarrow P$	A
(2)	$-P$	A // $-Q$
(3)	$---Q$	1, 2 MTT
(4)	$-Q$	3 DN

c)

(1)	$(A \vee B) \rightarrow T$	A
(2)	$Z \rightarrow A$	A
(3)	$T \rightarrow W$	A
(4)	Z	A // W
(5)	A	2, 4 MPP
(6)	$A \vee B$	5 VI
(7)	T	1, 6 MPP
(8)	W	3, 7 MPP

d)

(1)	$(A \to B) \& (C \to A)$	A
(2)	$(C \& (W \to Z)) \& W$	A // $(B \vee D) \& (Z \vee E)$
(3)	$A \to B$	1 &E
(4)	$C \to A$	1 &E
(5)	W	2 &E
(6)	$C \& (W \to Z)$	2 &E
(7)	C	6 &E
(8)	$W \to Z$	6 &E
(9)	A	4, 7 MPP
(10)	B	3, 9 MPP
(11)	$B \vee D$	10 VI
(12)	Z	8, 5 MPP
(13)	$Z \vee E$	12 VI
(14)	$(B \vee D) \& (Z \vee E)$	11, 13 &I