

Name: _____
 Student ID: _____

Assignment: Natural Deduction*

Question 1. (15 marks) Provide a justification (rule and line numbers) for each line of these proofs.

1	$W \Rightarrow \neg B$	
2	$A \& W$	
3	$\neg B \Rightarrow (J \& K)$	
4	W	
5	$\neg B$	
6	$J \& K$	
7	K	

1	$(W \vee X) \Rightarrow (Y \& Z)$	
2	$\neg Y$	
3	$\neg Y \vee \neg Z$	
4	$\neg(Y \& Z) \Rightarrow \neg(W \vee X)$	
5	$(\neg Y \vee \neg Z) \Rightarrow (\neg W \& \neg X)$	
6	$\neg W \& \neg X$	
7	$\neg X$	

1	$H \Rightarrow F$	
2	$H \Rightarrow G$	
3	$(F \& G) \Rightarrow I$	
4	$\neg I$	
5	$\neg I \Rightarrow \neg(F \& G)$	
6	$\neg(F \& G)$	
7	$\neg F \vee \neg G$	
8	$\neg F \Rightarrow \neg H$	
9	$\neg G \Rightarrow \neg H$	
10	$\neg H$	

*from Proofs and Concepts: the fundamentals of abstract mathematics by Dave Witte Morris and Joy Morris