Philosophy 60
Test 6

Instructions: Use the propositional calculus to derive both of the following.
1. (10 points): $(K \rightarrow M) \vee (N \rightarrow S), \sim M, \sim S \vdash \sim K \vee \sim N$

1.	$(K \rightarrow M) \vee (N \rightarrow S)$	A
2.	$\sim M$	A
3.	$\sim S$	A
4.	$K \rightarrow M$	H
5.	K	H
6.	M	4,5 →E
7.	$M \& \sim M$	2,6 &I
8.	$\sim K$	5-7, ~I
9.	$\sim K \vee \sim N$	8, vI
10.	$(K \rightarrow M) \rightarrow (\sim K \vee \sim N)$	4-9, ~I
11.	$(N \rightarrow S)$	H
12.	N	H
13.	S	10,11 →E
14.	$S \& \sim S$	3,12 &I
15.	$\sim N$	11-13, &I
16.	$\sim K \vee \sim N$	15, &I
17.	$(N \rightarrow S) \rightarrow (\sim K \vee \sim N)$	11-16, →I
18.	$\sim K \vee \sim N$	1,10,17 vE

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(5 pts): (A & ~B) ⊢ ~(~A v B)

1.	(A & ~B)	A
2.	A	1, &E
3.	~B	1, &E
4.	~A v B	H (~I)
5.	~A	H (→I)
6.	~(P & ~P)	H (~I)
7.	A & ~A	2,5 &I
8.	P & ~P	6-7 ~I
9.	A → (P & ~P)	5-8, →I
10.	B	H(→I)
11.	~(P & ~P)	H(~I)
12.	B & ~B	3,10 &I
13.	(P & ~P)	11-12, →I
14.	B → (P & ~P)	10-13, →I
15.	P & ~P	4,9, 13 vE
16.	~(~A v B)	4-15, ~I