6. Prove the following:

if $(\neg P \vee R) \wedge (\neg Q \vee R) \wedge (P \vee Q)$ then R

Prove by contradiction, using resolution.

1	$\neg P \vee R$	Premise
2	$\neg Q \vee R$	Premise
3	$P \vee Q$	Premise
4	$\neg R$	PBC
5	$\neg P$	Resolution - 1,3
6	$\neg Q$	Resolution - 2,3
7	Q	Resolution - 3,5
8	**FALSE**	Resolution - 6,7

7. Use resolution to prove:

if $(\neg P \vee Q) \wedge \neg(\neg(R \Rightarrow \neg Q) \vee \neg R)$ then $\neg P$

Construct your proof as follows.

a) Convert the premise to conjunctive normal form.

b) Using the re-written premises, prove by contradiction, using resolution.

$(\neg P \vee Q) \wedge \neg(\neg(R \Rightarrow \neg Q) \vee \neg R)$	Premise
$(\neg P \vee Q) \wedge \neg(\neg(\neg R \vee \neg Q) \vee \neg R)$	Implication
$(\neg P \vee Q) \wedge \neg((R \wedge Q) \vee \neg R)$	De Morgan's
$(\neg P \vee Q) \wedge (\neg(R \wedge Q) \wedge R)$	De Morgan's
$(\neg P \vee Q) \wedge (\neg R \vee \neg Q) \wedge R$	De Morgan's

1	$(\neg P \vee Q)$	Premise
2	$(\neg R \vee \neg Q)$	Premise
3	R	Premise
4	P	PCB
5	$\neg R \vee P$	Resolution - 1,2
6	$\neg R$	Resolution - 5,6
7	**FALSE**	Resolution - 3,6