

## YOUR MISSION

Prove that the Wumpus is in (1,3)  
(W13) and there is a pit in (3,1)  
(P31)

**FIRST** write the propositional rules for  
the relevant cells

**NEXT** write the proof steps and  
indicate what inference rules you  
used in each step

**A** = Agent  
**B** = Breeze  
**G** = Glitter, Gold  
**OK** = Safe square  
**P** = Pit  
**S** = Stench  
**V** = Visited  
**W** = Wumpus

## INFERENCE RULES

Modus Ponens

$A, A \rightarrow B$

ergo B

And Introduction

$A, B$

ergo  $A \wedge B$

And Elimination

$A \wedge B$

ergo A

Double Negation

$\neg\neg A$

ergo A

Unit Resolution

$A \vee B, \neg B$

ergo A

Resolution

$A \vee B, \neg B \vee C$

ergo  $A \vee C$

V12	V22		
S12	-S22		
-B12	-B22		
V11	V21		
-S11	B21		
-B11	-S21		

## Prove it!

1.  $V_{11}$  Given
2.  $V_{11} \rightarrow \neg W_{11}$  Domain Rule
3.  $\neg W_{11}$  MP: 1, 2
- ...
- ...
4.  $S_{12} \rightarrow W_{13} \vee W_{22} \vee W_{11}$  Dom Rule
5.  $W_{13} \vee W_{22} \vee W_{11}$  M.P.
6.  $W_{13} \vee W_{22}$  UR 3, 5
7.  $W_{13}$  UR 6...