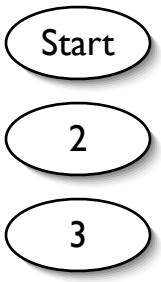
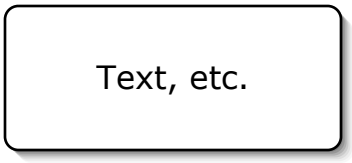
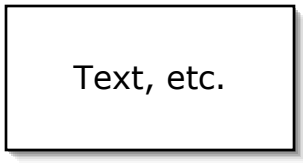
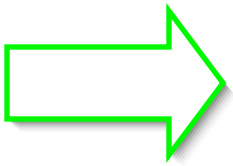
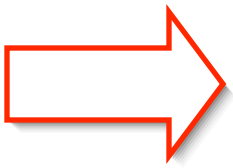
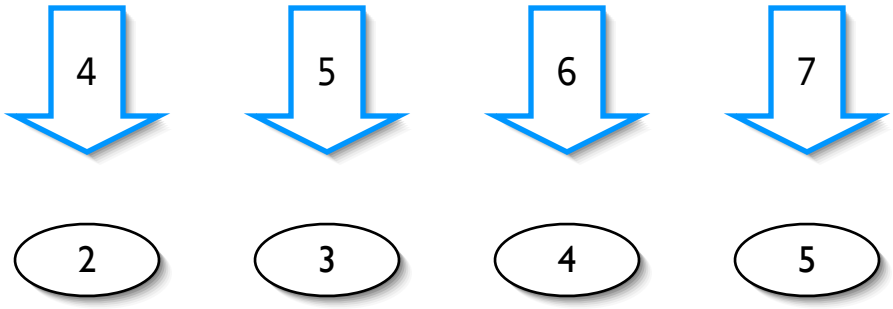
Legend:

State markers:	
Main user visible content and interface:	
Auxiliary user visible content and interface:	
Correct move:	
Incorrect move:	
Navigational move:	
Feedback content:	
Hint content:	

Start

Complete the following derivation by filling in the missing formulae. To fill in the formula on a given line, just click anywhere on that line.

1.	(∀x)(P(x) & Q(x))	Premise
2.	(∃y)(P(y) → R(y))	Premise
3.	P(w) → R(w)	Assum
4.	?	∀E: 1
5.	?	&EL: 4
6.	?	→E: 3, 5
7.	?	∃I: 6
8.	(∃z) R(z)	∃E: 2, 7



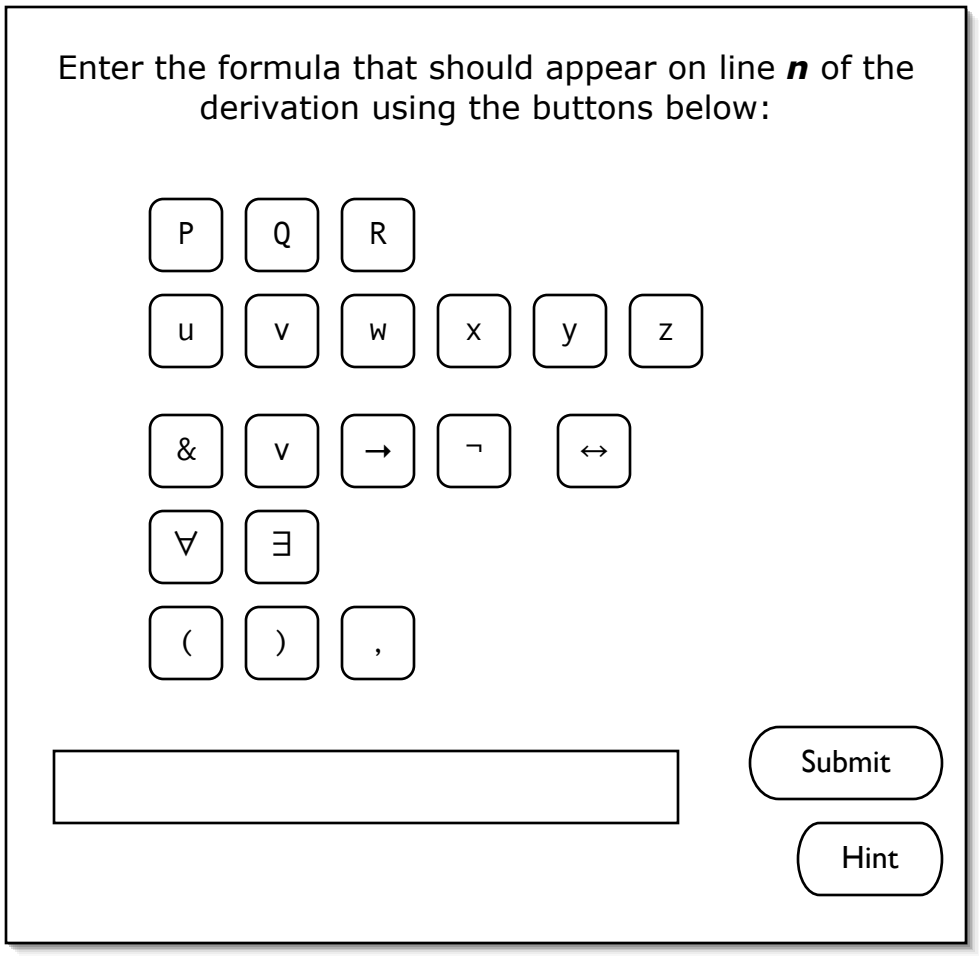
When a line in the derivation is clicked, the main portion of the user interface, diagrammed above, should remain constant, while a secondary dialogue box-type interface component should appear, with the line-specific interface. Alternatively, if a dialogue box-type interface is not available, a blank area in the main portion of the interface should become active and be populated with the currently active interactive components of the activity.

NOTE: As formulae are entered correctly by the student, the question marks on the lines above should be replaced with the correct formulae.

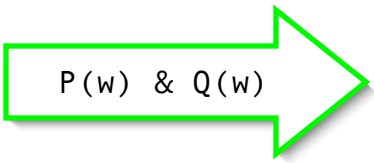
When all lines have been completed correctly, the instructions should be replaced with the following text:

Correct!

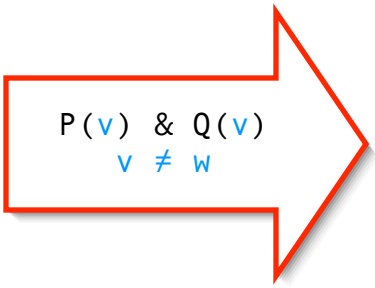
Interface for entering formulae:



2



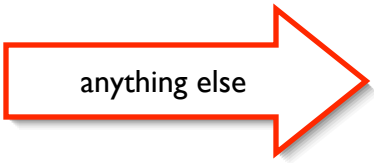
That's right.



Not quite. You are correct that the formula on this line should be a substitution instance of the universally quantified formula on line 1, but you've got the instantiating variable wrong. Take a look at the assumption on line 3 to see the variable you need.

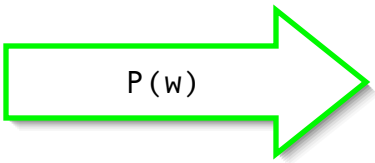
i.e., any of the following:

P(u) & Q(u)
P(v) & Q(v)
P(x) & Q(x)
P(y) & Q(y)
P(z) & Q(z)

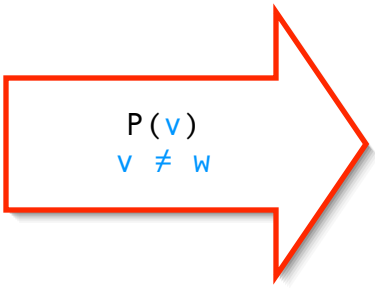


The formula should be a substitution instance of the universally quantified formula on line 1. You'll need to choose the instantiating variable carefully. Choose a variable that already appears in formulae on other lines in the derivation.

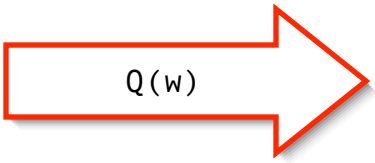
3



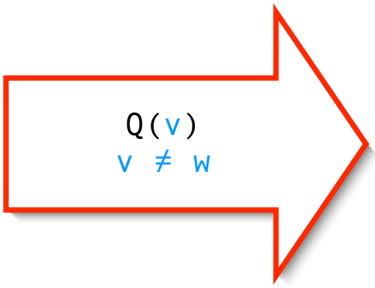
That's right.



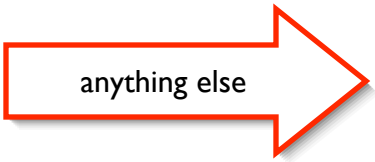
Not quite. You've got the instantiating variable wrong. Take a look at the assumption on line 3 to see the variable you need here.



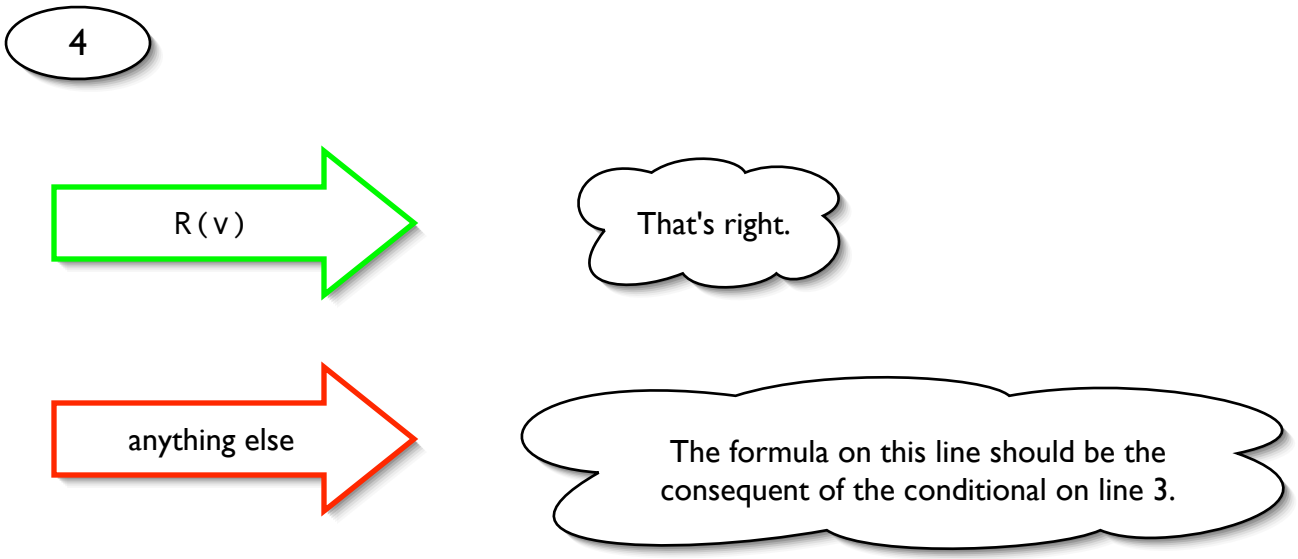
Not quite. This is the right-hand conjunct from the formula on line 4, not the right-hand conjunct.



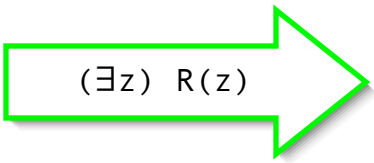
Not quite. You've got the instantiating variable wrong. Take a look at the assumption on line 3 to see the variable you need. Also, this would be the right-hand conjunct of the formula on line 4 (if the variable were correct), while it should be the left-hand conjunct.



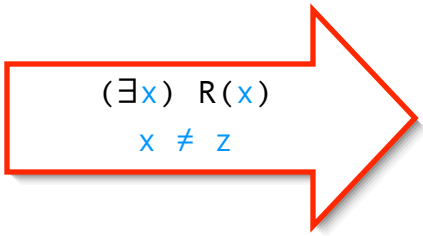
The formula should be a substitution instance of the universally quantified formula on line 1. You'll need to choose the instantiating variable carefully. Choose a variable that already appears in formulae on other lines in the derivation.


4
R (v)
That's right.
anything else
The formula on this line should be the consequent of the conditional on line 3.

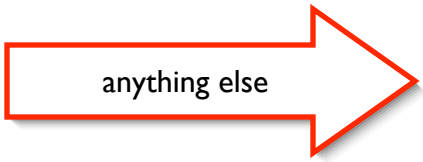
5



That's right.



While the formula you've entered is equivalent to that on line 8, in order to derive (∃z) R(z) using this formula as justification, the variables of quantification have to be the same.



If earlier lines in the derivation aren't enough to determine the formula that should be on this line, try looking at later lines in the derivation.

Hints

Each hint should contain the following, after specific hint content:

Click on a rule name to view the rule: ∀E, ∀I, ∃E, and ∃I

The links should be to the following files, as indicated by both order and colour:

AllE.gif
AllI.gif
ExistsE.gif
ExistsI.gif

2

When instantiating a universal, it is most often useful to use an instantiating term that appears elsewhere in the derivation (in the case of variables, pick ones that occur free).

The variable `w` has already been used as an instantiating term, for the assumption of a substitution instance of an existential.

Instantiating the universal on line, using `w` as the instantiating term, yields the following formula: `P(w) & Q(w)`.

3

Remember that applying &E L to a conjunction results in the left-hand conjunct being derived.

The formula on line 4, to which &E L is being applied, is P(w) & Q(w), so it is the left-hand conjunct of this formula that you need to enter.

The right-hand conjunct of P(w) & Q(w) is Q(w).

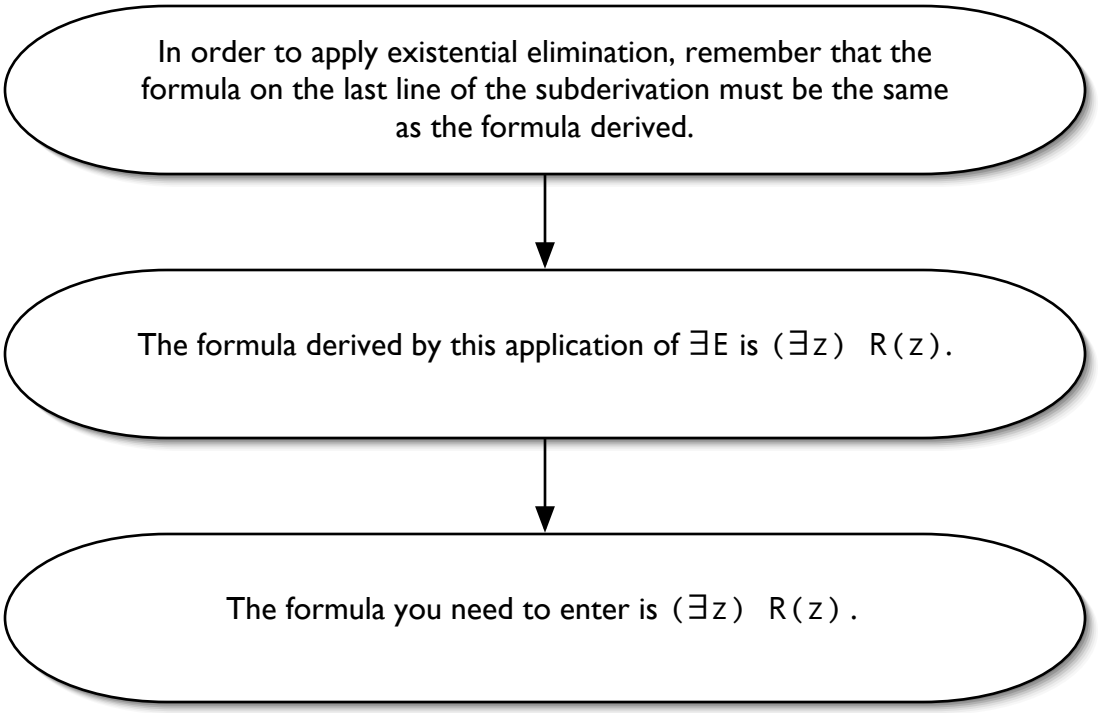
4

Remember that applying →E results in the consequent of that conditional being derived.

The conditional on line 3, to which →E is being applied, is P(w) → R(w), so it the consequent of this conditional that you need to enter.

The formula you need to enter is R(w).

5


In order to apply existential elimination, remember that the formula on the last line of the subderivation must be the same as the formula derived.
The formula derived by this application of ∃E is (∃z) R(z).
The formula you need to enter is (∃z) R(z).