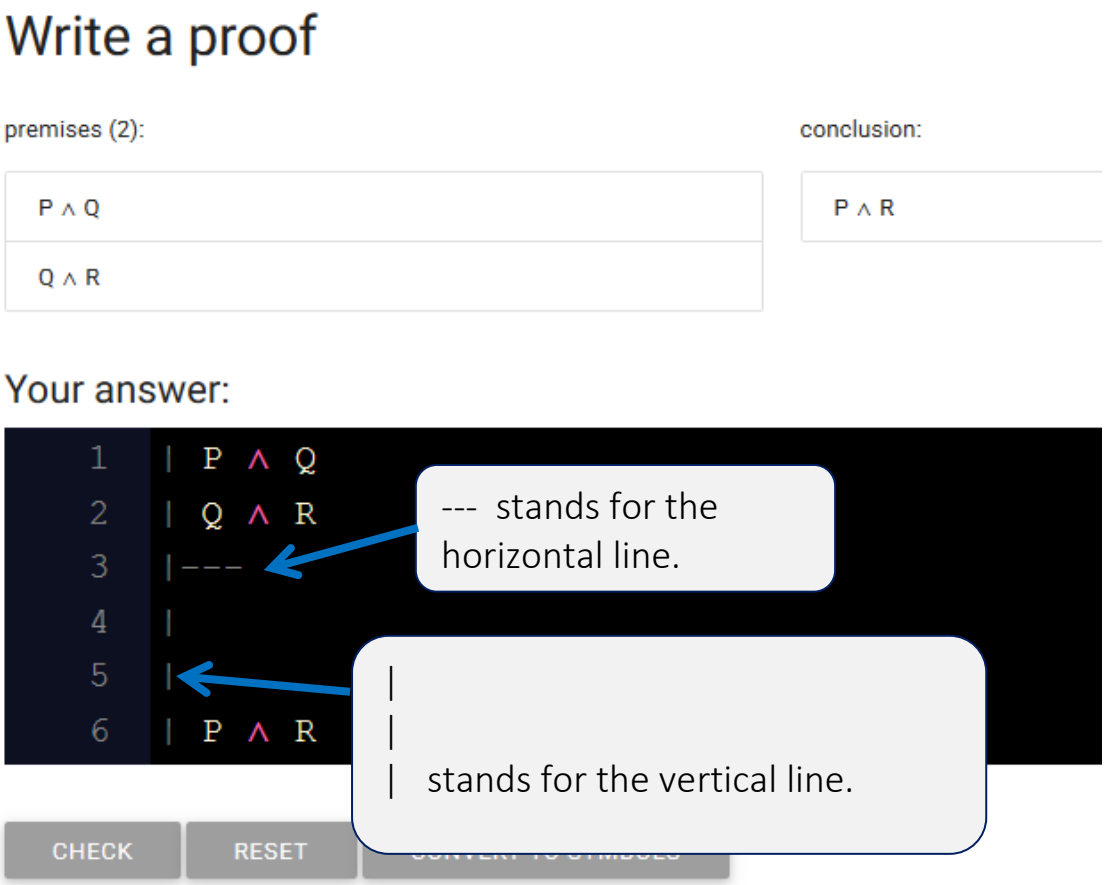
Content

Proofs on zoxiy

When you start an exercise, you're already given the basic form of the proof, with a couple of blank lines.
The box you're working in is just a text editor. You can add lines by pressing 'return' and delete lines just like you would in any text editor.
To repeat: the proof is just some text that you edit in the normal way.



It is recommended to do the proof on paper, and only when you are done copy it into zoxiy. Don't forget to work with the rules!
Here's the proof I want to type into zoxiy:

1.	P ∧ Q	
2.	Q ∧ R	
3.	P	∧Elim 1
4.	R	∧Elim 2
5.	P ∧ R	∧Intro 3,4

I first type P in line 4 (the numbers are just for reference in the justification, so it doesn't matter that we skip 3)

premises (2):

P ∧ Q

Q ∧ R

conclusion:

P ∧ R

Your answer:

```
1 | P ∧ Q
2 | Q ∧ R
3 |---
4 | P
5 |
6 | P ∧ R
```

CHECK RESET CONVERT TO SYMBOLS

To add the justification I need, first, to type //
This signals the machine the separation between the FOL sentence and the justification.

premises (2):

P ∧ Q

Q ∧ R

conclusion:

P ∧ R

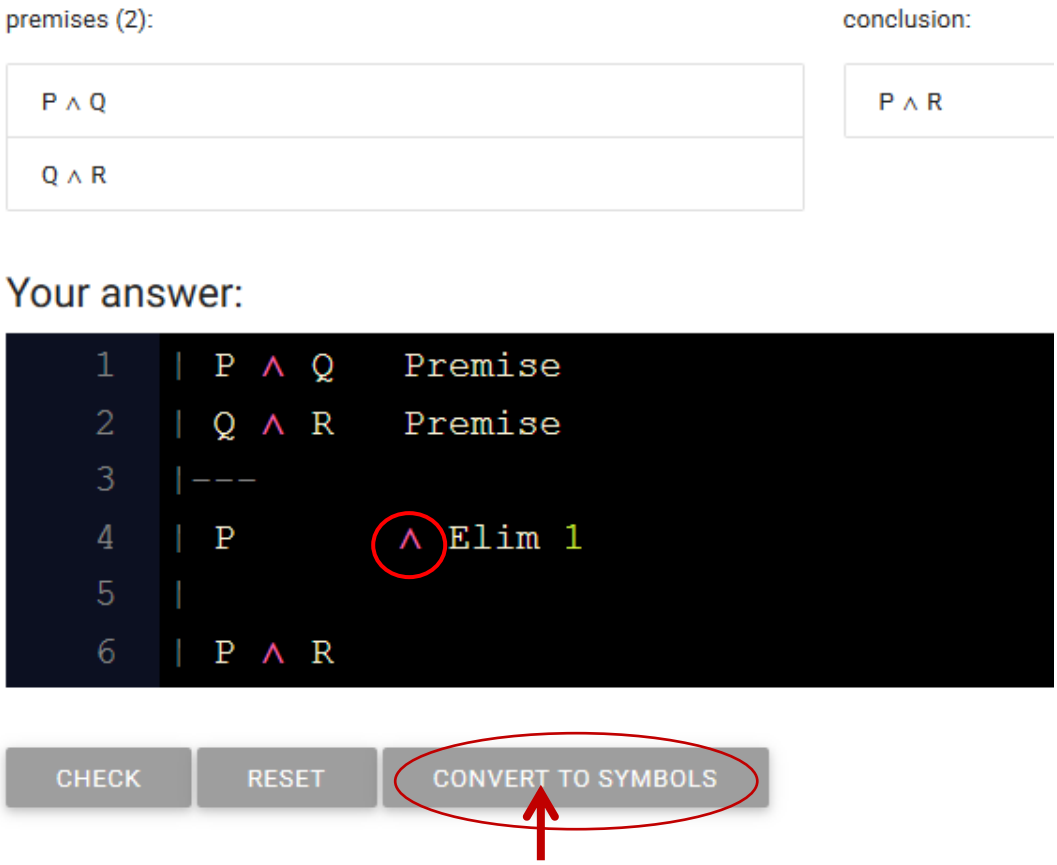
Your answer:

```
1 | P ∧ Q
2 | Q ∧ R
3 |---
4 | P // and elim 1
5 |
6 | P ∧ R
```

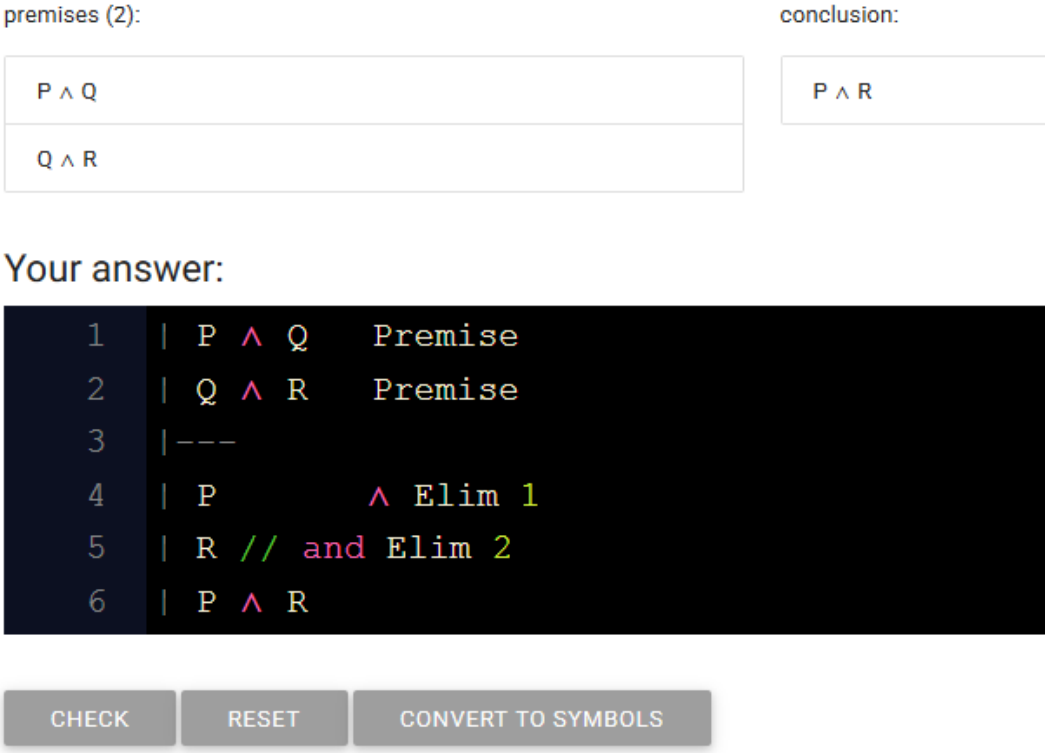
CHECK RESET CONVERT TO SYMBOLS

Note that I use the word ‘and’ instead of the symbol ‘∧’. (I could have also simply copied the ‘∧’ from lines 1, 2 or 6, and pasted it). There’s a list of words and symbols which zoxiy recognizes as substitutes to the logical symbols at https://warwick.ac.uk/fac/soc/philosophy/people/lerman/zoxiyguide/symbol_alternatives.pdf

When you click on ‘convert to symbols’, the machine will turn the ‘and’ into ‘∧’.



Next, in line 5 I type R with the justification,



And finally, I add the justification to line 6.

premises (2):

P ∧ Q

Q ∧ R

conclusion:

P ∧ R

Your answer:

```
1  | P ∧ Q   Premise
2  | Q ∧ R   Premise
3  |---
4  | P       ∧ Elim 1
5  | R // and Elim 2
6  | P ∧ R // and Intro 4,5
```

CHECK RESET CONVERT TO SYMBOLS

Converting to symbols I get -

premises (2):

P ∧ Q

Q ∧ R

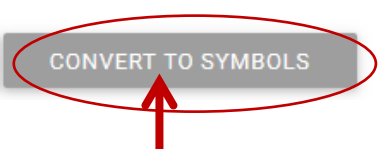
conclusion:

P ∧ R

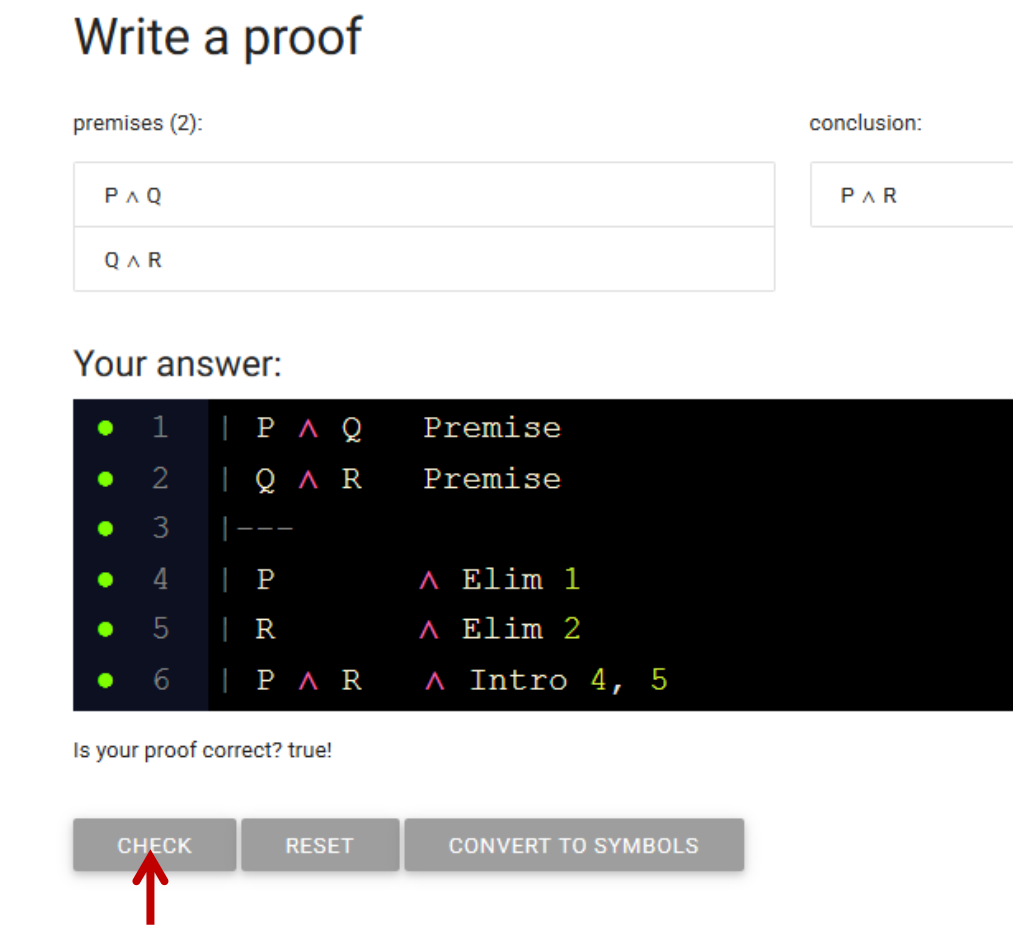
Your answer:

```
1  | P ∧ Q   Premise
2  | Q ∧ R   Premise
3  |---
4  | P       ∧ Elim 1
5  | R       ∧ Elim 2
6  | P ∧ R   ∧ Intro 4, 5
```

CHECK RESET CONVERT TO SYMBOLS

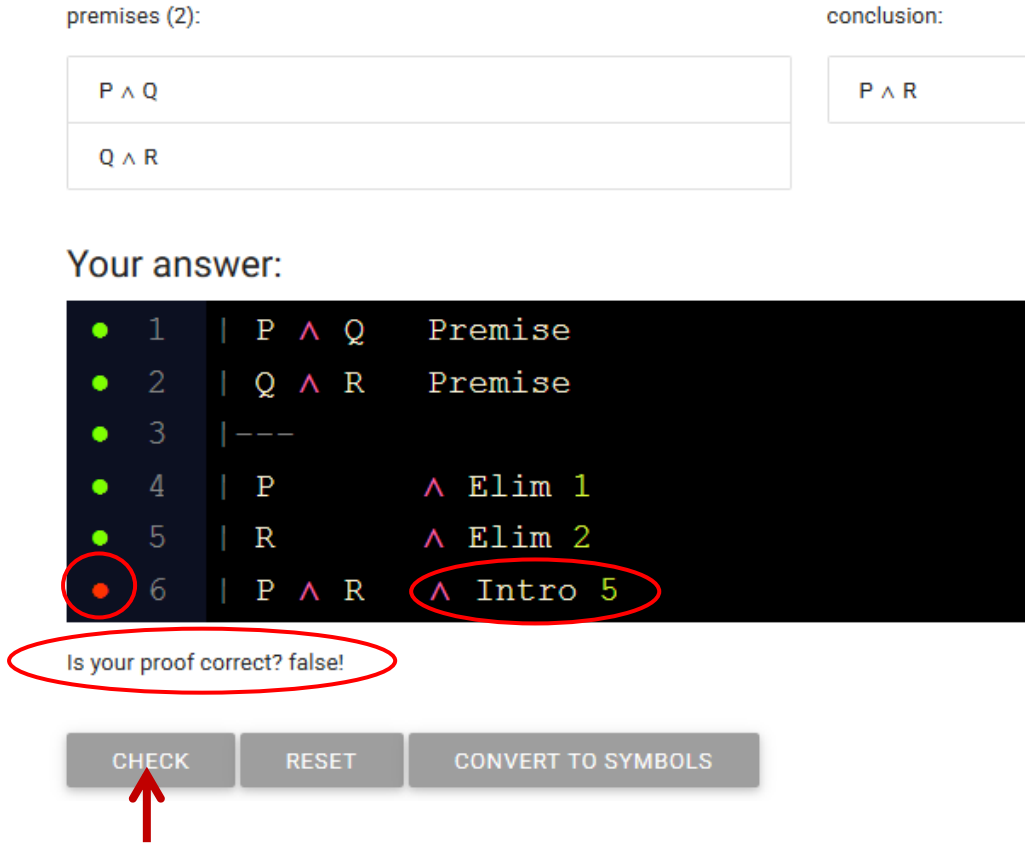


I can now ask zoxiy to check my proof



The green dots indicate that all steps are correct.

To see what happens when I make a mistake, suppose that in my justification in line 6 I cited only one line. Here the machine detects a mistake



Suppose now, that I thought that I don't need line 5, and I can reach P ∧ R by applying ∧Intro on the basis of lines 4 and 2. Again, the machine will mark this as a mistake.

premises (2):

P ∧ Q

Q ∧ R

conclusion:

P ∧ R

Your answer:

```
1 | P ∧ Q    Premise
2 | Q ∧ R    Premise
3 |---
4 | P        ∧ Elim 1
5 | P ∧ R    ∧ Intro 4, 2
```

Is your proof correct? false!

CHECK RESET CONVERT TO SYMBOLS

Finally, note what happens when I forget to separate the FOL sentence from the justification. Even though I typed in a correct justification, the machine doesn't recognize it, and indicates a mistake.

premises (2):

P ∧ Q

Q ∧ R

conclusion:

P ∧ R

Your answer:

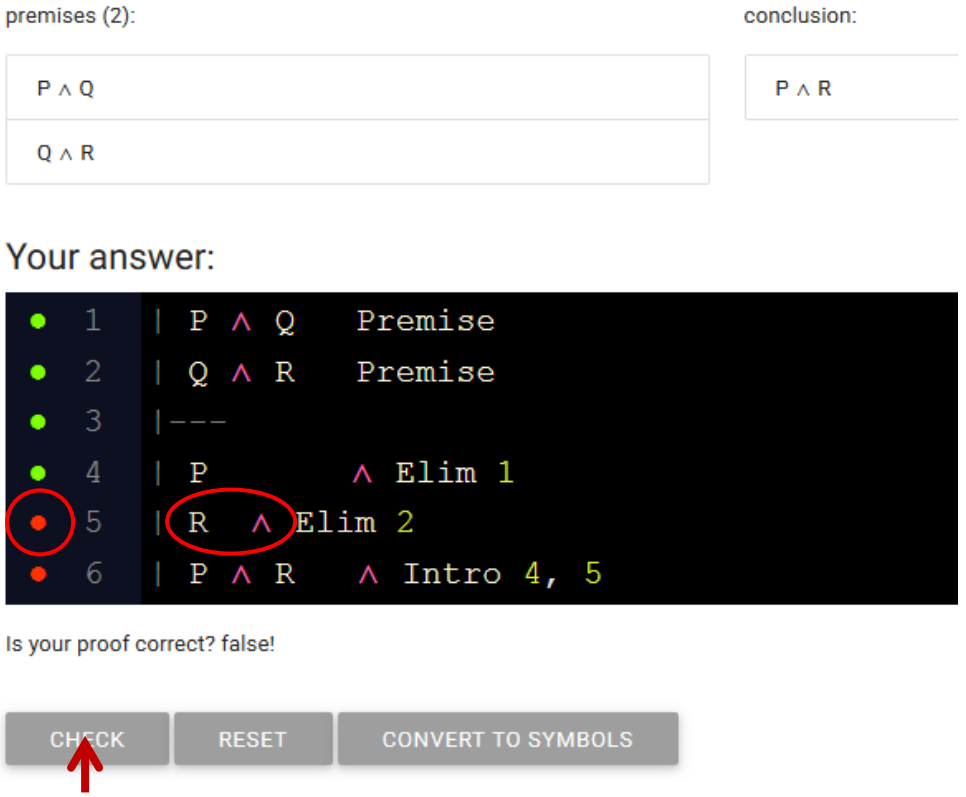
```
1 | P ∧ Q    Premise
2 | Q ∧ R    Premise
3 |---
4 | P        ∧ Elim 1
5 | R and Elim 2
6 | P ∧ R    ∧ Intro 4, 5
```

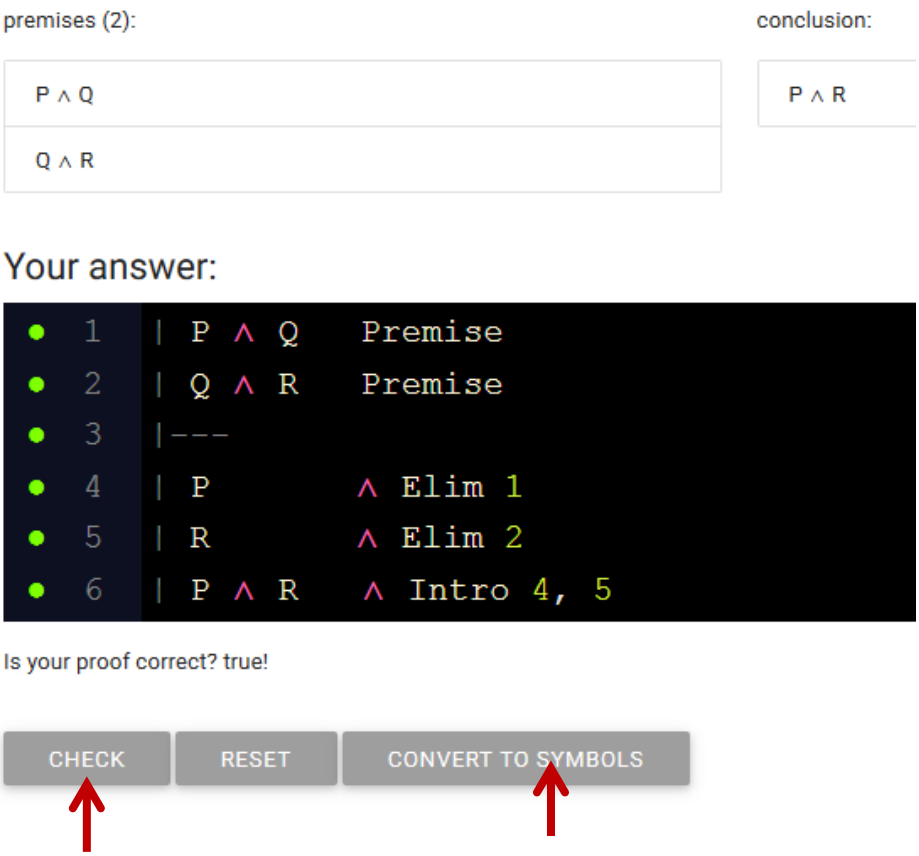
Is your proof correct? false!

CHECK RESET CONVERT TO SYMBOLS

(Line 6 is also regarded as a mistake, since the machine doesn't recognize it as a line that can provide an accurate bases for deriving P ∧ R by ∧Intro.)

Note that the problem doesn't arise only when I type a word instead of a symbol. Even if I copy and paste the '∧' symbol, the machine needs the '//' to recognize where the justification starts.
It is only after we use 'convert to symbol' that zoxiy shows us the justification without the '//'



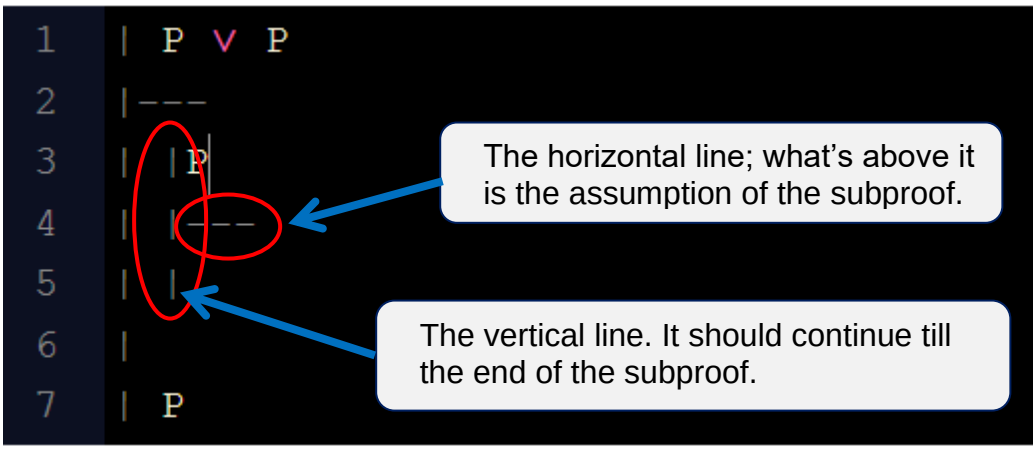


Subproofs on zoxiy

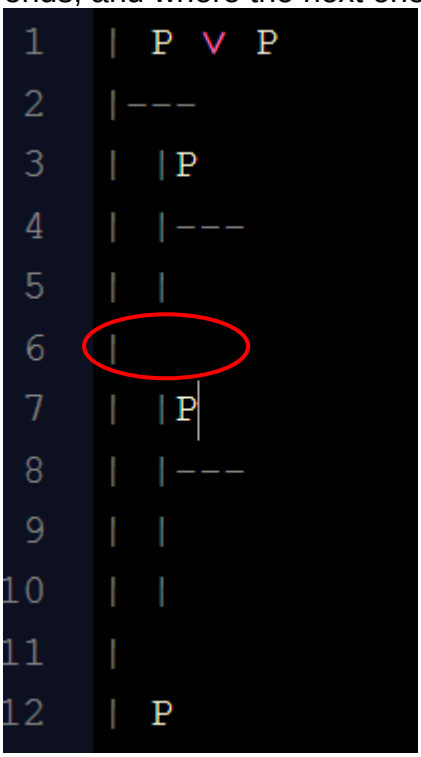
As we said earlier, we draw the vertical line of a proof be using '|' at the beginning of each line of the proof, so that the line looks as follows

|
|
|
|

We draw the horizontal line by typing 3 hyphens, thus ---
So when we want to create a subproof we draw the vertical and the horizontal line of the subproof in just the same way.



To draw one subproof after another, you will have to leave an empty line between them, in order to indicate to the machine where the first subproof ends, and where the next one starts.



Constants in proofs with quantifiers

Constants are lower case letters from the beginning of the alphabet, which can be followed by a numerical index. Note that the machine recognizes only the letters ‘a’-‘d’ as constants, thus if you need more than 4 different constants in a proof you should use constants with numerical indices (e.g., a1, b4, etc.)

Boxed constants on zoxiy

To enter a boxed constant on zoxiy, enclose the constants in square brackets. E.g., [a] and [b] below