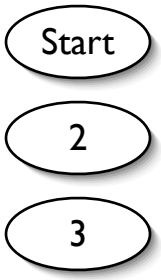
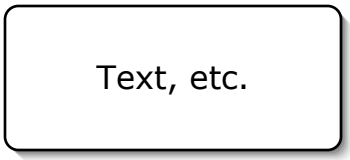
Legend:

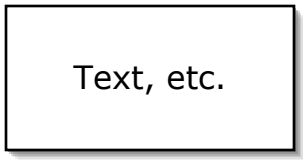
State markers:



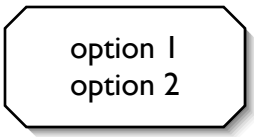
Main user visible content and interface:



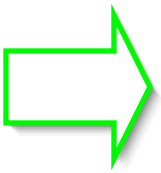
Auxiliary user visible content and interface:



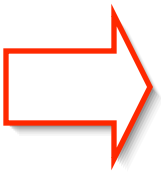
Pulldown menu:



Correct move:



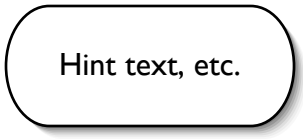
Incorrect move:



Navigational move:

Feedback content:

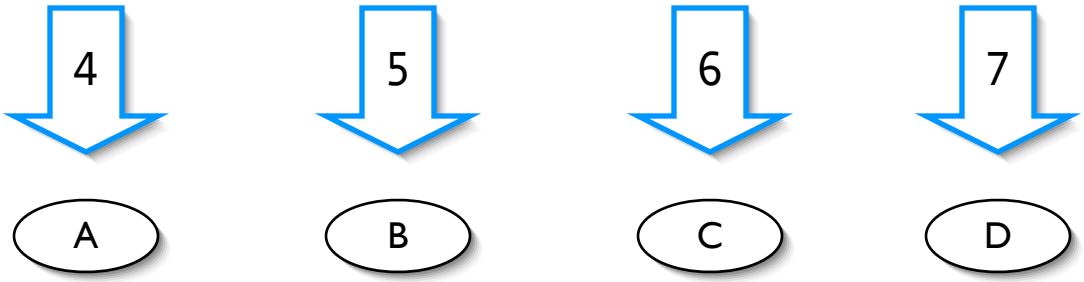
Hint content:



Start

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

1.	P(a,b,b)	Premise
2.	a = m	Premise
3.	g = b	Premise
4.	P(m,b,b)	?
5.	g = g	?
6.	b = g	?
7.	P(m,g,b)	?



Completed derivation:

1.	P(a,b,b)	Premise
2.	a = m	Premise
3.	g = b	Premise
4.	P(m,b,b)	=E: 1, 2
5.	g = g	=I
6.	b = g	=E: 5, 3
7.	P(m,g,b)	=E: 4, 6

A

Complete the correct justification for line 4 using the pull-down menus below to fill in the missing components.

=I
=E

:

1, 2
2, 1
1, 3
3, 1
(none)

=E

answered only this

Good. Now complete the justification by making a selection from the other pull-down menu.

answered both

That's right.

=I

=I can only be used to derive formulae of the form ***x*** = ***x***, where ***x*** is any term.

1, 2

answered only this

Good. Now complete the justification by making a selection from the other pull-down menu.

answered both

That's right.

2, 1

You've got the right lines, but in the wrong order. The first line cited should be the formula in which the left-hand identical will be replaced, according to the identity appearing on the second line cited.

1, 3

You've got the wrong identity, as the term g doesn't appear to be replaced in the formula on line 1.

3, 1

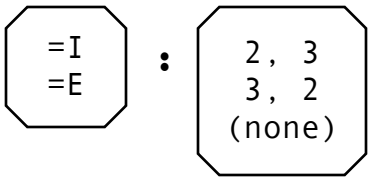
The second line cited for an application of =E must be an identity.

(none)

The formula on line 4 isn't an identity, so couldn't have been derived using =I.

B

Complete the correct justification for line 5 using the pull-down menus below to fill in the missing components.



=I

answered only this

Good. Now complete the justification by making a selection from the other pull-down menu.

answered both

That's right.

=E

Since the only term occurring in the derived formula is g, in order to use =E to derive this formula, an identity with g as the right-hand identical would be necessary, but there is no such identity up to this point in the derivation.

(none)

answered only this

Good. Now complete the justification by making a selection from the other pull-down menu.

answered both

That's right.

2, 3
3, 2

Those two formulae have no terms in common, so no application of =E using them is possible.

C

Complete the correct justification for line 6 using the pull-down menus below to fill in the missing components.

=I
=E
:
5, 3
3, 5
(none)

=E

answered only this

Good. Now complete the justification by making a selection from the other pull-down menu.

answered both

That's right.

=I

=I can only be used to derive formulae of the form ***x*** = ***x***, where ***x*** is any term.

5, 3

answered only this

Good. Now complete the justification by making a selection from the other pull-down menu.

answered both

That's right.

3, 5

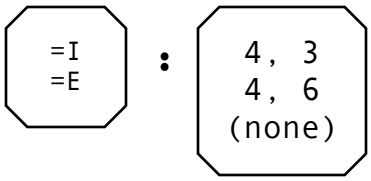
You've got the lines in the wrong order. Remember that the formula in which the substitution is performed appears on the line cited first, while the identity that licences the replacement is on the line cited second.

(none)

The identity on line 6 doesn't have the same term to both sides of the equality symbol, so couldn't have been derived using =I.

D

Complete the correct justification for line 7 using the pull-down menus below to fill in the missing components.



=E

answered only this

Good. Now complete the justification by making a selection from the other pull-down menu.

answered both

That's right.

=I

=I can only be used to derive formulae of the form ***x*** = ***x***, where ***x*** is any term.

4, 6

answered only this

Good. Now complete the justification by making a selection from the other pull-down menu.

answered both

That's right.

4, 3

You picked the wrong identity. =E only works in one direction: occurrences of the left-hand identical are replaced with occurrences of the right-hand one, not the other way around.

(none)

The formula on line 7 isn't an identity, so couldn't have been derived using =I.

Hint

Each hint should contain the following after specific hint content:

Click here to view the rules for identity.

The link should be to the following file:

tempmissingjustification7hint.gif

A

Identity introduction can only be used to derive identities, so that rule couldn't have been used in this case.

Recall that the first line to which identity elimination is applied is the formula in which a term is being replaced, and the second line is the identity itself.

The formula `P(m,b,b)` can be obtained by replacing the occurrence of `a` in the formula `P(a,b,b)` from line 1with `m`. The terms `a` and `m` are the left and right identicals, respectively, of the identity on line 2.

B

Identity introduction can always be used to derive any identity of the form $x = x$, and it takes no lines as justification.

C

Identity elimination can be used to replace a term in another identity as well as it can any other type of formula.

The only two identities the derivation so far with terms in common are `g = b` on line 3 and `g = g` on line 5.

Obviously, replacing an occurrence of `g` with `g` wouldn't change a formula, so it must be `g = g` in which a term is replaced, and `g = b` must be the identity that licences the replacement.

D

Identity introduction can only be used to derive identities, so that rule couldn't have been used in this case.

Recall that the first line to which identity elimination is applied is the formula in which a term is being replaced, and the second line is the identity itself.

The formula `P(m,g,b)` can be obtained by replacing the first occurrence of `b` in the formula `P(m,b,b)` from line 4 with `g`. The terms `b` and `g` are the left and right identicals, respectively, of the identity on line 6.