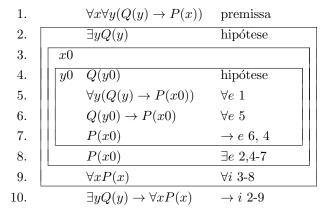
## Exercício 1

1.		$\exists x (P(x) \land Q(x))$	premissa
2.	$x_0$	$P(x0) \wedge Q(x0)$	hipótese
3.		P(x0)	$\wedge e \ 2$
4.		Q(x0)	$\wedge e \ 2$
5.		$\exists x P(x)$	$\exists i \ 3$
6.		$\exists x Q(x)$	$\exists i \ 4$
7.		$\exists x P(x) \land \exists x Q(x)$	$\wedge i$ 5,6
8.		$\exists x P(x) \land \exists x Q(x)$	$\exists e \ 1.2-7$

## Exercício 2

1.		$\exists x P(x) \vee \exists x Q(x)$	premissa
2.		$\exists x P(x)$	hipótese
3.	$x_0$	P(x0)	hipótese
4.		$P(x0) \vee Q(x0)$	$\forall i \ 3$
5.		$\exists x (P(x) \vee Q(x))$	$\exists i \ 4$
6.		$\exists x (P(x) \vee Q(x))$	$\exists e \ 2,3-5$
7.		$\exists x Q(x)$	hipótese
8.	$x_0$	Q(x0)	hipótese
9.		$P(x0) \vee Q(x0)$	$\forall i \ 8$
10.		$\exists x (P(x) \lor Q(x))$	$\exists i \ 9$
11.		$\exists x (P(x) \vee Q(x))$	$\exists e \ 7,8-10$
12.		$\exists x (P(x) \lor Q(x))$	∨e 1, 2-6, 7-11

Exercício 3 - solução 1



Exercício 3 - solução 2

1.	$\forall x \forall y$	$y(Q(y) \to P(x))$	premissa	
2.	$\exists y Q$	(y)	hipótese	
3.	y0  Q(y0)	0)	hipótese	
4.	$x_0$			
5.	$\forall y \in \mathcal{C}$	$Q(y) \to P(x0)$	$\forall e \ 1$	
6.	Q(y)	$(0) \to P(x0)$	$\forall e \ 5$	
7.	P(x)	0)	$\rightarrow e$ 6, 3	
8.	$\forall xP$	C(x)	$\forall i \ 4\text{-}7$	
9.	$\forall x P$	C(x)	$\exists e \ 2,3-8$	
10.	$\exists y Q$	$(y) \to \forall x P(x)$	$\rightarrow i$ 2-9	