

1: $\text{var } i$	premiss
2: $\forall x. (P(f(x,x)) \rightarrow P(f(x,j)))$	premiss
3: $\neg P(f(i,j))$	premiss
4: $\forall x. P(f(x,x))$	assumption
5: $P(f(i,i))$	\forall elim 4
6: $P(f(i,i)) \rightarrow P(f(i,j))$	\forall elim 2
7: $P(f(i,j))$	\rightarrow elim 6,5
8: \perp	\neg elim 3,7
9: $\neg \forall x. P(f(x,x))$	\neg intro 4–8