

# Problem 10.4

Assume we have a language consisting of the object constant  $a$  and the unary function constant  $s$ .  
Prove the goal from the given premises.

Proof Editor		
1.	falls(a)	Premise
2.	AX:(falls(X) => falls(s(s(X))))	Premise
3.	AX:(falls(s(X)) => falls(X))	Premise
4.	falls(X) => falls(s(s(X)))	Universal Elimination: 2
5.	falls(X)	Assumption
6.	falls(s(s(X)))	Implication Elimination: 4, 5
7.	falls(s(s(X))) => falls(s(X))	Universal Elimination: 3
8.	falls(s(X))	Implication Elimination: 7, 6
9.	falls(X) => falls(s(X))	Implication Introduction: 8
10.	AX:(falls(X) => falls(s(X)))	Universal Introduction: 9
11.	AX:falls(X)	Induction: 1, 10
Goal	AX:falls(X)	Complete Submit
<div>AssumptionNegation IntroductionImplication IntroductionUniversal Introduction</div> <div>ReiterationNegation EliminationImplication EliminationUniversal Elimination</div> <div>DeleteAnd IntroductionBiconditional IntroductionExistential Introduction</div>		

And Elimination

Biconditional Elimination

Existential Elimination

Or Introduction

Induction

Or Elimination

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