Polina Mejia

11.1

Check Your Proof:

Proof: Repository - hw11.1

Construct a proof for the argument: $\forall x(Gx \rightarrow Hx), Ga \wedge Gb \therefore Ha \wedge Hb$

1	$\forall x(Gx \rightarrow Hx)$		
2	$Ga \wedge Gb$		
3	$Ga \rightarrow Ha$	Universal instantiation 1	
4	$Gb \rightarrow Hb$	Universal instantiation 1	
5	Ga	Simplification 2	
6	Gb	Simplification 2	
7	Ha	Modus Ponens 3, 5	×
8	Hb	Modus Ponens 4, 6	
9	$Ha \wedge Hb$	Adjunction 7, 8	

new line new subproof

☺ Congratulations! This proof is correct.

check proof start over

11.2

Check Your Proof:

Proof: Repository - hw11.2

Construct a proof for the argument: $\forall x(Hx \leftrightarrow Fx), \neg Fc \therefore \neg Hc$

1	$\forall x(Hx \leftrightarrow Fx)$		
2	$\neg Fc$		
3	$Hc \leftrightarrow Fc$	Universal instantiation 1	
4	$\neg Hc$	Equivalence 2, 3	

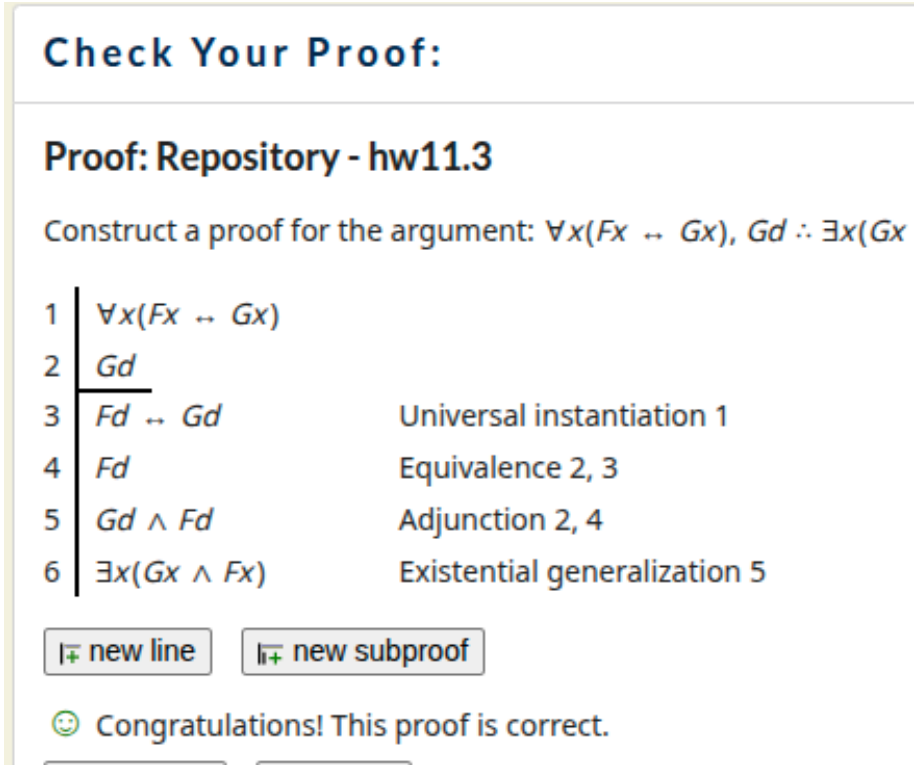
new line new subproof

☺ Congratulations! This proof is correct.

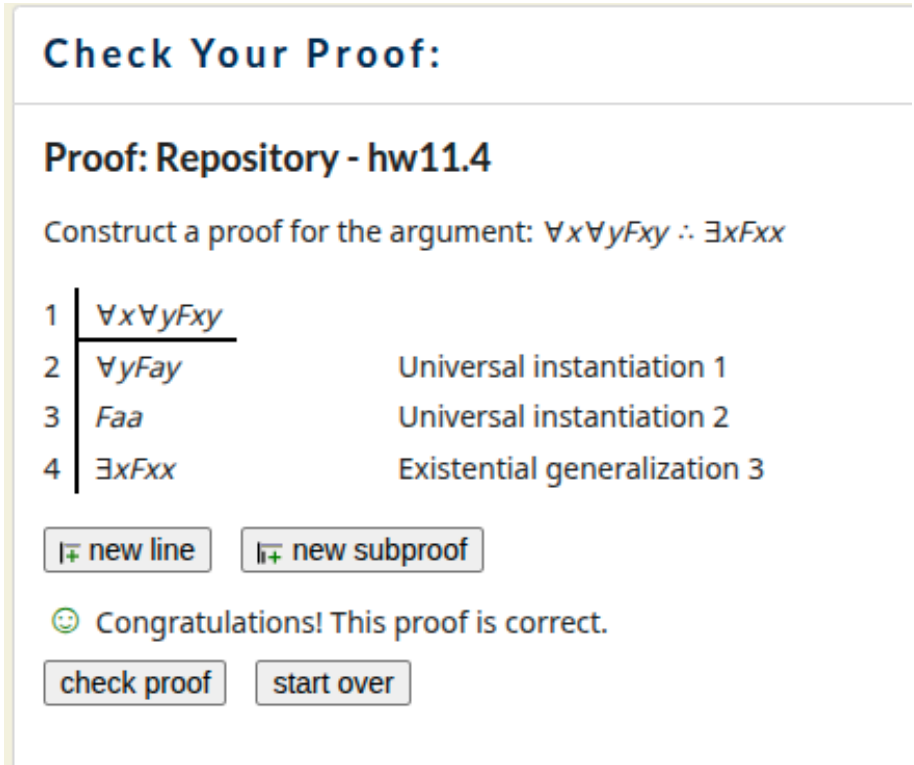
check proof start over

Polina Mejia

11.3



11.4



Polina Mejia

11.5

Check Your Proof:

Proof: Repository - hw11.5

Construct a proof for the argument: $\forall xFxx \therefore \exists x \exists yFxy$

1	$\forall xFxx$	
2	Faa	Universal instantiation 1
3	$\exists yFay$	Existential generalization 2
4	$\exists x \exists yFxy$	Existential generalization 3

new line | new subproof

Congratulations! This proof is correct.

check proof | start over

11.6

Check Your Proof:

Proof: Repository - hw11.6

Construct a proof for the argument: $\therefore \forall x(Fx \rightarrow Gx) \rightarrow (\exists xFx \rightarrow \exists xGx)$

1	$\forall x(Fx \rightarrow Gx)$	
2	$Fa \rightarrow Ga$	Universal instantiation 1
3	$\exists xFx$	
4	Fa	
5	Ga	Modus Ponens 2, 4
6	$\exists xGx$	Existential generalization 5
7	$\exists xGx$	Existential instantiation 3, 4–6
8	$\exists xFx \rightarrow \exists xGx$	Conditional derivation 3–7
9	$\forall x(Fx \rightarrow Gx) \rightarrow (\exists xFx \rightarrow \exists xGx)$	Conditional derivation 1–8

new line | new subproof

Congratulations! This proof is correct.

check proof | start over

Polina Mejia

11.7

Check Your Proof:

Proof: Repository - hw11.7

Construct a proof for the argument: $\exists x \neg(Fx \wedge Gx) \therefore \exists x(\neg Fx \vee \neg Gx)$

1	$\exists x \neg(Fx \wedge Gx)$	
2	$\neg(Fa \wedge Ga)$	
3	$\neg(\neg Fa \vee \neg Ga)$	
4	$\neg\neg Fa$	
5	Fa	Double Negation 4
6	$\neg\neg Ga$	
7	Ga	Double Negation 6
8	$Fa \wedge Ga$	Adjunction 5, 7
9	$\neg(Fa \wedge Ga)$	Repeat 2
10	$\neg Ga$	Reductio Ad Absurdum 6–9
11	$\neg Fa \vee \neg Ga$	Addition 10
12	$\neg(\neg Fa \vee \neg Ga)$	Repeat 3
13	$\neg Fa$	Reductio Ad Absurdum 4–12
14	$\neg Fa \vee \neg Ga$	Addition 13
15	$\neg(\neg Fa \vee \neg Ga)$	Repeat 3
16	$(\neg Fa \vee \neg Ga)$	Reductio Ad Absurdum 3–15
17	$\exists x(\neg Fx \vee \neg Gx)$	Existential generalization 16
18	$\exists x(\neg Fx \vee \neg Gx)$	Existential instantiation 1, 2–17

new line new subproof

☺ Congratulations! This proof is correct.

check proof start over