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CST 329

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Then, please prove all hw12 repository problems at proof-checker.org. They are titled hw12.1, hw12.2, ..., 12.6.

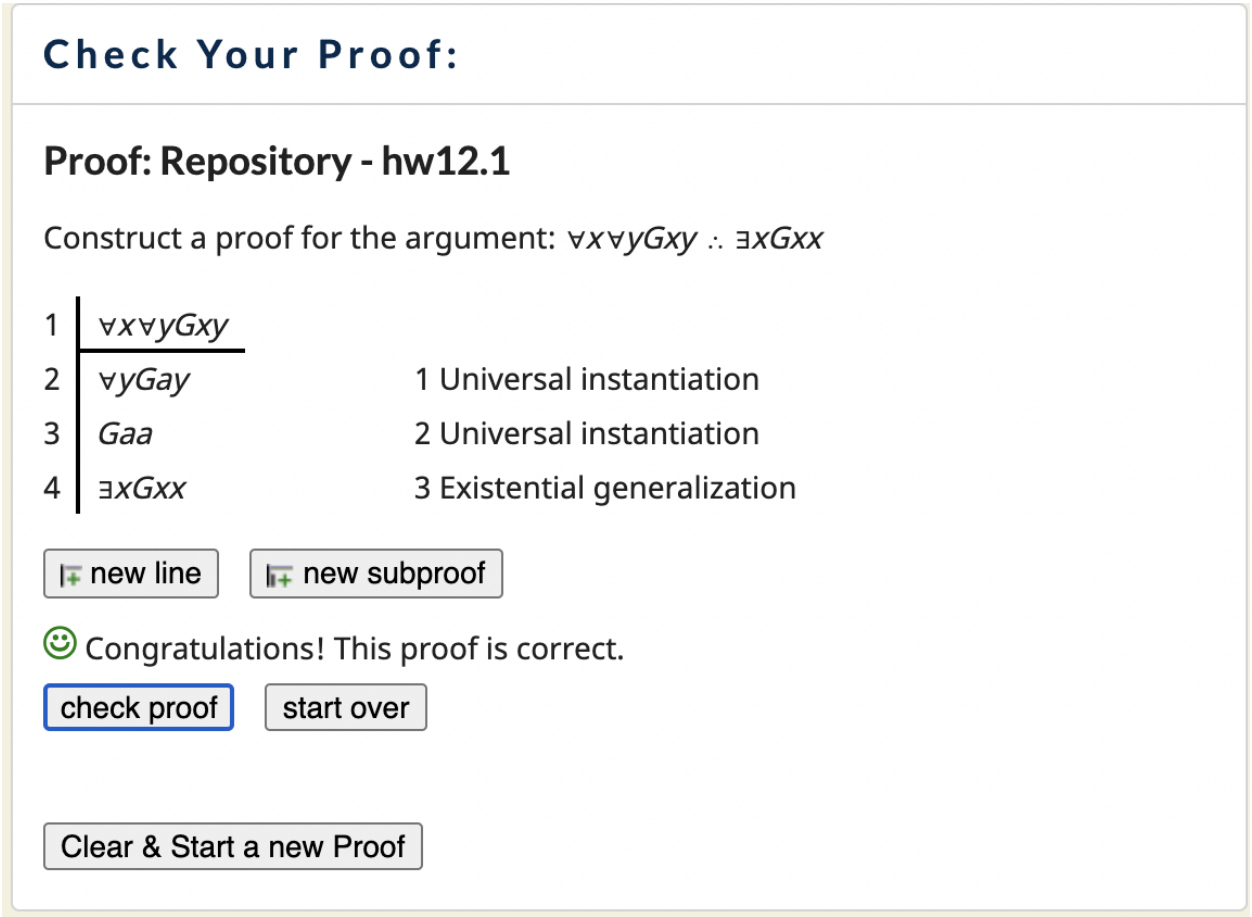
A record of your proof will automatically be stored when you get successful proof. You can load those proofs later.

Paste the screenshots of your successful proofs in a document with proper labels (e.g., hw12.2 above the screenshot image). Write your name on top of the document. Then create a single pdf of that document and submit it here.

Please remember that you are not to work with others in any way on your proofs.

Feel free to ask the instructor or TA for hints if you get stuck. Start early!

12.1



12.2

Check Your Proof:

Proof: Repository - hw12.2

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

1	$\forall xFxx$	
2	Faa	1 Universal instantiation
3	$\exists xFxa$	2 Existential generalization
4	Fba	
5	$\exists yFby$	4 Existential generalization
6	$\exists x \exists yFxy$	5 Existential generalization
7	$\exists x \exists yFxy$	3, 4–6 Existential instantiation

new line | new subproof

check proof | start over

Clear & Start a new Proof

12.3

Check Your Proof:

Proof: Repository - hw12.3

Construct a proof for the argument: $\forall xFx \therefore \forall y(Fy \wedge Fy)$

1	$\forall xFx$	
2	Fa	1 Universal instantiation
3	Fa	2 Repeat
4	$Fa \wedge Fa$	2, 3 Adjunction
5	$\forall y(Fy \wedge Fy)$	4 Universal derivation

new line new subproof

Congratulations! This proof is correct.

check proof start over

Clear & Start a new Proof

12.4

Check Your Proof:

Proof: Repository - hw12.4

Construct a proof for the argument: $\forall x(Fx \leftrightarrow Gx)$, $Fa \wedge \exists xHxa \therefore \exists xGx$

1	$\forall x(Fx \leftrightarrow Gx)$	
2	$Fa \wedge \exists xHxa$	
3	$Fa \leftrightarrow Ga$	1 Universal instantiation
4	Fa	2 Simplification
5	Ga	3, 4 Equivalence
6	$\exists xGx$	5 Existential generalization

new line new subproof

Congratulations! This proof is correct.

check proof start over

Clear & Start a new Proof

12.5

Check Your Proof:

Proof: Repository - hw12.5

Construct a proof for the argument: $\therefore \forall y \exists x(Fy \rightarrow Fx)$

1	Fa	
2	Fa	1 Repeat
3	$Fa \rightarrow Fa$	1–2 Conditional derivation
4	$\exists x(Fa \rightarrow Fx)$	3 Existential generalization
5	$\forall y \exists x(Fy \rightarrow Fx)$	4 Universal derivation

new line new subproof

Congratulations! This proof is correct.

check proof start over

Clear & Start a new Proof

12.6

Check Your Proof:

Proof: Repository - hw12.6

Construct a proof for the argument: $\exists xHx$, $\forall x(Gx \rightarrow Fx)$, $\forall x(Hx \rightarrow Gx) \therefore \exists x(Hx \wedge Fx)$

1	$\exists xHx$	
2	$\forall x(Gx \rightarrow Fx)$	
3	$\forall x(Hx \rightarrow Gx)$	
4	$Ga \rightarrow Fa$	2 Universal instantiation
5	$Ha \rightarrow Ga$	3 Universal instantiation
6	Ha	
7	Ga	5, 6 Modus Ponens
8	Fa	4, 7 Modus Ponens
9	$Ha \wedge Fa$	6, 8 Adjunction
10	$\exists x(Hx \wedge Fx)$	9 Existential generalization
11	$\exists x(Hx \wedge Fx)$	1, 6–10 Existential instantiation

new line new subproof

Congratulations! This proof is correct.

check proof start over

Clear & Start a new Proof