Pol Mejia

13.1

Proof: Repository - hw13.1

Construct a proof for the argument: ∴ $\forall x(Fx \lor \neg Fx)$

1	$\neg(Fa \lor \neg Fa)$	
2	$\neg Fa$	
3	$Fa \lor \neg Fa$	Addition 2
4	$\neg(Fa \lor \neg Fa)$	Repeat 1
5	Fa	Reductio Ad Absurdum 2–4
6	$Fa \lor \neg Fa$	Addition 5
7	$\neg(Fa \lor \neg Fa)$	Repeat 1
8	$(Fa \lor \neg Fa)$	Reductio Ad Absurdum 1–7
9	$\forall x(Fx \lor \neg Fx)$	Universal derivation 8

new line new subproof

☺ Congratulations! This proof is correct.

check proof start over

13.2

Check Your Proof:

Proof: Repository - hw13.2

Construct a proof for the argument: $\forall xFx \land \forall xGx$ ∴ $\forall x(Fx \land Gx)$

1	$\forall xFx \land \forall xGx$	
2	$\forall xFx$	Simplification 1
3	$\forall xGx$	Simplification 1
4	Fa	Universal instantiation 2
5	Ga	Universal instantiation 3
6	$Fa \land Ga$	Adjunction 4, 5
7	$\forall x(Fx \land Gx)$	Universal derivation 6

new line new subproof

☺ Congratulations! This proof is correct.

check proof start over

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13.3

Check Your Proof:

Proof: Repository - hw13.3

Construct a proof for the argument: $Fa \vee Gb$, $Gb \to b = c$, $\neg Fa \therefore Gc$

1	$Fa \vee Gb$	
2	$Gb \to b = c$	
3	$\neg Fa$	
4	Gb	Modus Tollendo Ponens 1, 3
5	$b = c$	Modus Ponens 2, 4
6	Gc	Substitution of identicals 4, 5

new line | new subproof

☺ Congratulations! This proof is correct.

check proof | start over

13.4

Check Your Proof:

Proof: Repository - hw13.4

Construct a proof for the argument: $\forall x \forall y(Fxy \to x = y) \therefore Fab \to Fba$

1	$\forall x \forall y(Fxy \to x = y)$	
2	$\forall y(Fay \to a = y)$	Universal instantiation 1
3	$Fab \to a = b$	Universal instantiation 2
4	$\quad Fab$	
5	$\quad a = b$	Modus Ponens 3, 4
6	$\quad Fbb$	Substitution of identicals 4, 5
7	$\quad Fba$	Substitution of identicals 5, 6
8	$Fab \to Fba$	Conditional derivation 4–7

new line | new subproof

☺ Congratulations! This proof is correct.

check proof | start over

Pol Mejia

13.5

Proof: Repository - hw13.5

Construct a proof for the argument: $\forall x \forall y(x = y \to Rxy) \therefore \forall x Rxx$

1	$\forall x \forall y(x = y \to Rxy)$	
2	$\forall y(a = y \to Ray)$	Universal instantiation 1
3	$a = a \to Raa$	Universal instantiation 2
4	$a = a$	Identity introduction
5	Raa	Modus Ponens 3, 4
6	$\forall x Rxx$	Universal derivation 5

new line | new subproof

☺ Congratulations! This proof is correct.

check proof | start over