Geometry Honors
Laws of Inference

Name: KEY

1. Set up and verify the Law of Detachment. $[(p \to q) \wedge p] \to q$

p	q	$(p \to q)$	$(p \to q) \wedge p$	$[(p \to q) \wedge p] \to q$
T	T	T	T	T
T	F	F	F	T
F	T	T	F	T
F	F	T	F	T

2. Can the following be considered a law? Why or why not? $[(p \to q) \wedge q] \to p$

p	q	$p \to q$	$[(p \to q) \wedge q]$	$[(p \to q) \wedge q] \to p$
T	T	T	T	T
T	F	F	F	T
F	T	T	T	F
F	F	T	F	T

NO

3. Set up and verify the Law of Contrapositive Inference. $[(p \to q) \wedge \sim q] \to \sim p$

p	q	~p	~q	p → q	[(p → q) ∧ ~q]	[ ] → ~p
T	T	F	F	T	F	T
T	F	F	T	F	F	T
F	T	T	F	T	F	T
F	F	T	T	T	T	T

4. Set up and verify the Law of Disjunctive Inference. $[(p \vee q) \wedge \sim p] \to q$ $[(p \vee q) \wedge \sim q] \to p$

p	q	~p	p ∨ q	[(p ∨ q) ∧ ~p]	[ ] → q
T	T	F	T	F	T
T	F	F	T	F	T
F	T	T	T	T	T
F	F	T	F	F	T

p	q	~q	p ∨ q	[(p ∨ q) ∧ ~q]	[ ] → p
T	T	F	T	F	T
T	F	T	T	T	T
F	T	F	T	F	T
F	F	T	F	F	T