Geometry HNS
Day 4- Intro to Logic

Name: KEY

Tautology: a statement that is always true, no matter what. If you construct a truth table for a statement and all of the column values for the statement are true (T), then the statement is a tautology because it's always true!

For #s 1-3, determine if the given compound statement is a tautology.

Ex 1: $[p \wedge (p \rightarrow q)] \rightarrow q$

Yes, a tautology!

p	q	$(p \rightarrow q)$	$[p \wedge (\quad)]$	$[\quad] \rightarrow q$
T	T	T	T	T
T	F	F	F	T
F	T	T	F	T
F	F	T	F	T

Ex 2: $(p \rightarrow q) \wedge (\sim q \rightarrow \sim p)$

p	q	$\sim p$	$\sim q$	$(p \rightarrow q)$	$(\sim q \rightarrow \sim p)$	$(\quad) \wedge (\quad)$
T	T	F	F	T	T	T
T	F	F	T	F	F	F
F	T	T	F	T	T	T
F	F	T	T	T	T	T

No! Not a Tautology

Ex 3: $(q \rightarrow p) \vee (\sim p \leftrightarrow q)$

p	q	$\sim p$	$(q \rightarrow p)$	$(\sim p \leftrightarrow q)$	$(\quad) \vee (\quad)$
T	T	F	T	F	T
T	F	F	T	T	T
F	T	T	F	T	T
F	F	T	T	F	T

Yes, a Tautology

H.W: Study the basic truth tables. Read through and **study** the Laws of Inference. Your learning will be **assessed** next class (for a mini quiz grade?!).