

$$p \wedge (q \vee r) \equiv (p \wedge q) \vee (p \wedge r)$$

$$p \vee (q \wedge r) \equiv (p \vee q) \wedge (p \vee r)$$

$$p \wedge p \equiv p \quad p \vee p \equiv p$$

t: tautology  
 c: contradiction

$$p \vee t \equiv t \quad p \wedge c \equiv c$$

$$p \wedge t \equiv p \quad p \vee c \equiv p$$

Sep 1-9:59 AM

1.2.  $p \rightarrow q$  if p then q

study  $\uparrow$  p  $\rightarrow$  q  $\uparrow$  pass class  
 p: hypothesis  
 q: conclusion

p	q	$p \rightarrow q$
T	T	T
T	F	F
F	T	T
F	F	T

Sep 1-10:06 AM

Stop or I'll shoot

if you don't stop then I'll shoot

$\neg p \vee q$

p	q	$\neg p$	$\neg p \vee q$
T	T	F	T
T	F	F	F
F	T	T	T
F	F	T	T

Sep 1-10:11 AM

$(p \wedge q) \rightarrow r$

p	q	r	$p \wedge q$	$(p \wedge q) \rightarrow r$
T	T	T	T	T
T	T	F	T	F
T	F	T	F	T
T	F	F	F	T
F	T	T	F	T
F	T	F	F	T
F	F	T	F	T
F	F	F	F	T

Sep 1-10:15 AM

if you skip class then you will fail the course.

$\neg(p \rightarrow q) \equiv \neg(\neg p \vee q)$  def of  $\rightarrow$   
 $\equiv \neg(\neg p) \wedge \neg q$  DeMorgan's  
 $\equiv p \wedge \neg q$  double neg.

Sep 1-10:19 AM

p: today is Easter  
 q: tomorrow is Monday  
 $p \rightarrow q$ ?

$\neg q \rightarrow \neg p$  contrapositive

p	q	$p \rightarrow q$	$\neg p$	$\neg q$	$\neg q \rightarrow \neg p$
T	T	T	F	F	T
T	F	F	F	T	F
F	T	T	T	F	T
F	F	T	T	T	T

Sep 1-10:24 AM

$q \rightarrow p$		converse	inverse
$p$	$q$	$q \rightarrow p$	$\neg p \rightarrow \neg q$
T	T	T	T
T	F	F	F
F	T	T	T
F	F	T	T

Sep 1-10:30 AM

$p$  only if  $q \equiv p \rightarrow q$

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$p$  if and only if  $q$   
 biconditional  
 $q \rightarrow p \wedge p \rightarrow q$   
 $p \text{ iff } q$

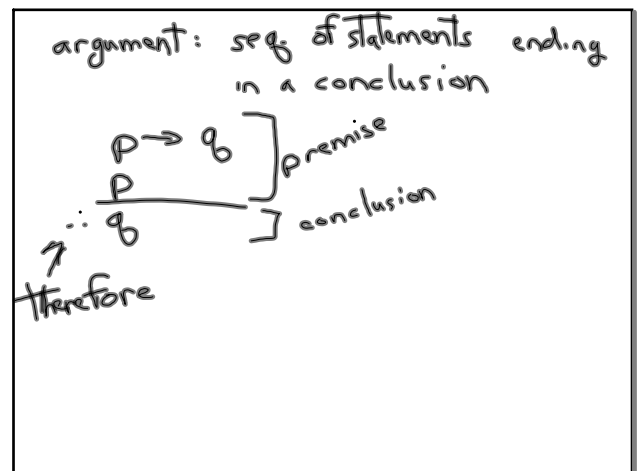
$p$	$q$	$q \rightarrow p$	$p \rightarrow q$	$(1) \wedge (2)$
T	T	T	T	T
T	F	T	F	F
F	T	F	T	F
F	F	T	T	T

Sep 1-10:35 AM

$p$  is a sufficient condition for  $q$   
 $\equiv p \rightarrow q$

$p$  is a necessary condition for  $q$   
 $\equiv \neg p \rightarrow \neg q$   
 $\equiv q \rightarrow p$

Sep 1-10:43 AM



Sep 1-10:45 AM