

A tautology is a <sup>compound.</sup> statement which is true, regardless of the truth values of the statements of which it is composed

reference table 9

$(p \wedge q) \rightarrow q$

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

This is a tautology  
Because they are all true

reference table / 10

$$(\sim p \vee q) \rightarrow \sim(p \wedge q)$$

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

Not a tautology.  
 Since the 1<sup>st</sup> Row is F

reference table

$$(p \wedge q) \rightarrow (p \rightarrow q)$$

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

Tautology

reference table 12

$$\sim(p \vee \sim q) \rightarrow (\sim p \vee \sim q)$$

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

tautology

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① pg 22.

Exploratory: 1, 5, 9, 11, 13, 15

Written: 1, 3, 5, 7

② Use a Truth Table to  
find Tautology.

$$p \rightarrow (p \vee q)$$