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Subject: Assignment from Book

Chapter no: 1

Section no: 1

Exercise : 30

(30)

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

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

number of rows = 4

[∵ number of variables = 2, so  $2^n = 4$ ] - via permutation

(b) number of variables = 3

∴ number of rows =  $2^3 = 8$

(c) number of variables = 6

∴ number of rows =  $2^6 = 64$

(d) number of variables = 5

∴ number of rows =  $2^5 = 32$

Each variable has 2 values: T or F so n variables all taken at once with repetition gives  $2^n$  rows by permutation.