

Problem 1

There are two different meanings for this sentence:

1. The two women each saw a different man
2. The two women both saw the same two men

Consider the set of women $W = \{w_1, w_2\}$. In the first interpretation, the set of men is of cardinality 2 ($M = \{m_1, m_2\}$) whereas in the second interpretation, the set of men is of cardinality 1 ($M = \{m_1\}$).

Problem 2

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

p	q	$(p \leftrightarrow q)$	$\neg(p \leftrightarrow q)$
T	T	T	F
T	F	F	T
F	T	F	T
F	F	T	F

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

s	$\neg s$	r	$(r \vee \neg s)$	q	$(q \wedge (r \vee \neg s))$	p	$(p \vee (q \wedge (r \vee \neg s)))$
T	F	T	T	T	T	T	T
T	F	T	T	T	T	F	T
T	F	T	T	F	F	T	T
T	F	T	T	F	F	F	F
T	F	F	F	T	F	T	T
T	F	F	F	T	F	F	F
T	F	F	F	F	F	T	T
T	F	F	F	F	F	F	F
F	T	T	T	T	T	T	T
F	T	T	T	T	T	F	T
F	T	T	T	F	F	T	T
F	T	T	T	F	F	F	F
F	T	F	T	T	T	T	T
F	T	F	T	T	T	F	T
F	T	F	T	F	F	T	T
F	T	F	T	F	F	F	F

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

Problem 3

An example of a contradictory WFF would be $(p \wedge \neg p)$. Something cannot be both true and not true at the same time, thus this formula is never satisfied.