

2.2. 1, 2, 3, 5, 8bc, 10, 11, 12, 13, 22ab, 26

1. a)  $P \Rightarrow Q$  b)  $r \Rightarrow P$  c)  $q \Rightarrow P$  d)  $\sim r \Rightarrow P$ 2. a)  $\sim p \Rightarrow r$  b)  $r \Rightarrow (P \wedge q)$  c)  $\sim q \Rightarrow (P \wedge \sim r)$  d)  $q \Rightarrow (\sim P \wedge \sim r)$ 3. if  $2+2 \neq 4$ , then i'm not the queen.

if i'm POTUS, then I walk to work

if i'm not late, then I took the train

if no time, too tired, no store

no money, no car, no house

5. a True b False c True d False

8. b)  $r \Rightarrow s$  c)  $\sim s \Rightarrow \sim p$ 10.  $P$   $\sim P$   $(P \wedge \sim P)$ 

0	1	0	Absurdity
1	0	0	

q	P	$\sim q$	$(\sim q \wedge P) \vee q$
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0	0	1	F
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0	1	1	T
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1	0	0	F
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1	1	0	T
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contingency

11.  $P \Rightarrow (q \Rightarrow P)$ 

0	0	0	Contingency
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1	1	1	
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 $q \Rightarrow (q \Rightarrow P)$ 

0	0	0	Contingency
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1	1	1	
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? 12.

? 13

22. a) true b) False

26.