1

A Yes this is. $5+2=7$ is a proposition no variables present so it is. It shows a statement that is either true or false

B **no, there is no statement that is either true or false**

C **Yes, this is a true or false statement. It most likely is false , but still could be proven**

D **yes, this is a true or false that is also true, It is self dependent, but addressable**

2

A

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

B

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

3

(A) $s \vee \neg f$

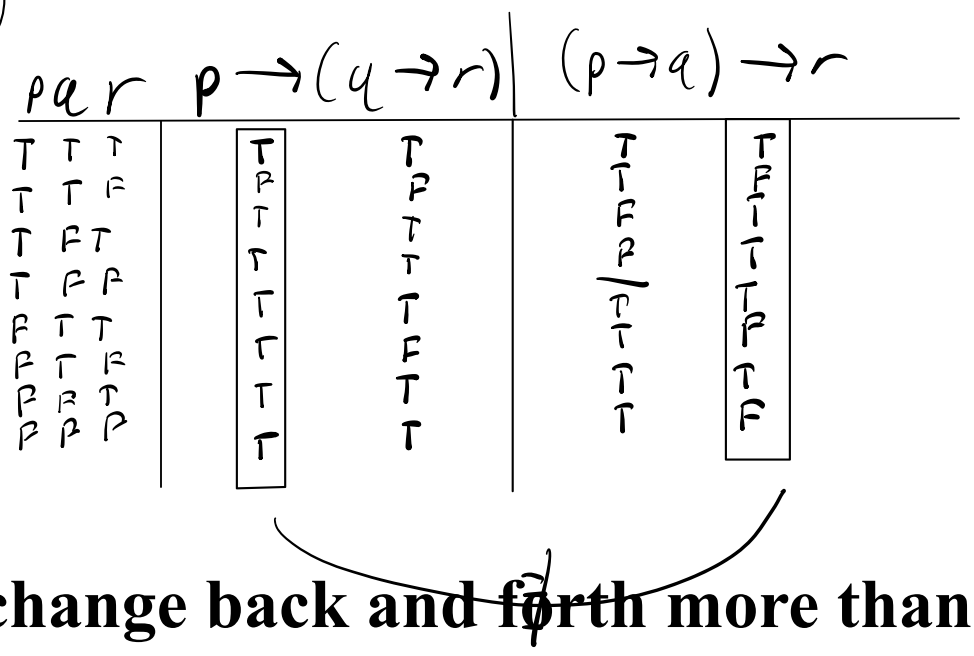
(B) $s \rightarrow (\neg r \wedge f)$

4

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

One reason is that this is the dis j active form shown to be true. Another reason is that the negation of a means that there are more case it can be true, this logically equivalent

5



r change back and forth more than p so it will be hard for something to be equivalent

6 2^n

p and q = 4

$p = 2$ thus 2^n

$P_n = 2^n$

7 $\neg p \rightarrow (p \rightarrow q) \equiv T$

$\equiv \neg p \rightarrow (\neg p \vee q)$ Disjuctive form

$\equiv \neg(\neg p) \vee (\neg p \vee q)$

$\equiv p \vee (\neg p \vee q)$ D. negation

$\equiv (p \vee \neg p) \vee q$ Distributive

$\equiv T \vee q$ Excudid middle

$\equiv T$ Domination laws