

core: existence proofs

· construct a network with human-chosen. neights that is able to solve a problem

exhaustive, so no consideration of general ization o does not shine light on how we should find out those weight

1-1 4)

a) P: Ralph is tall

Q: Ed is tall

R: Ralph is handsome

5: Ed is handsome

(PAQ)V(RAS)

b) (PVR) (QVS)

() (¬(PVR)) N(¬(QVS))

d)-(PAR)V(QNS)

1.16)

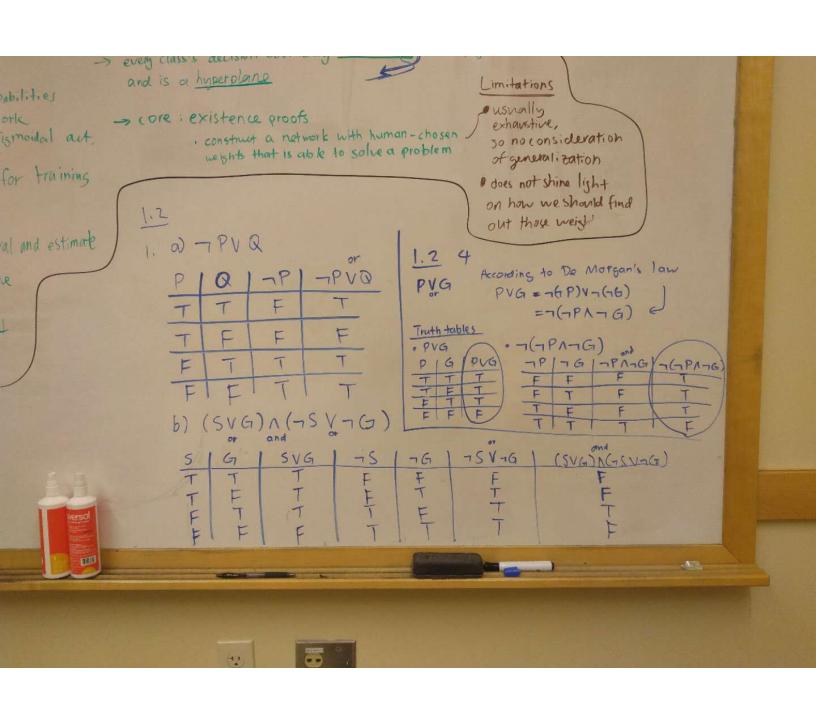
a) - (PM-S) (by De Morgan's law) = TPVS

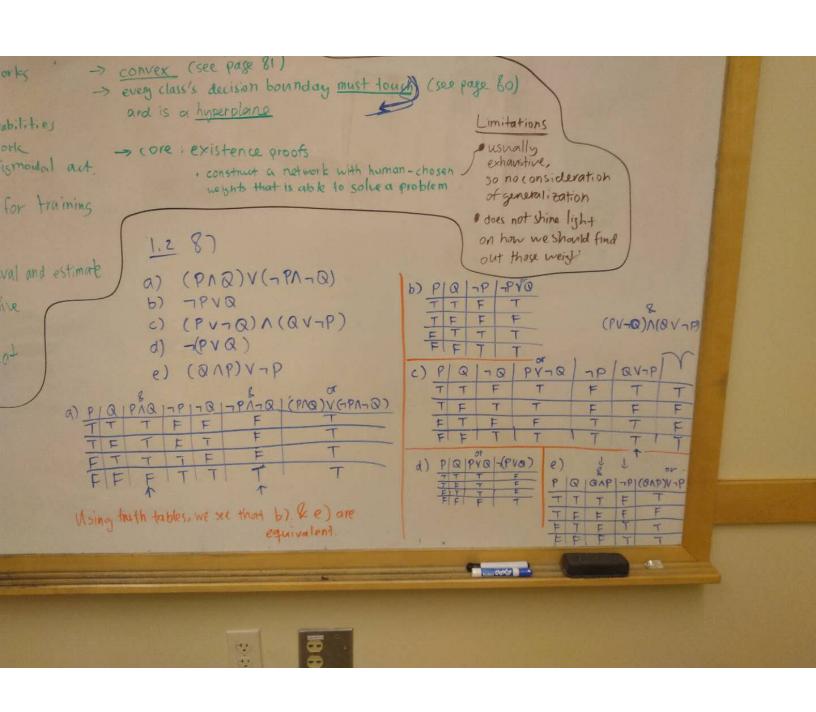
I will not buy pants or I will by shirk

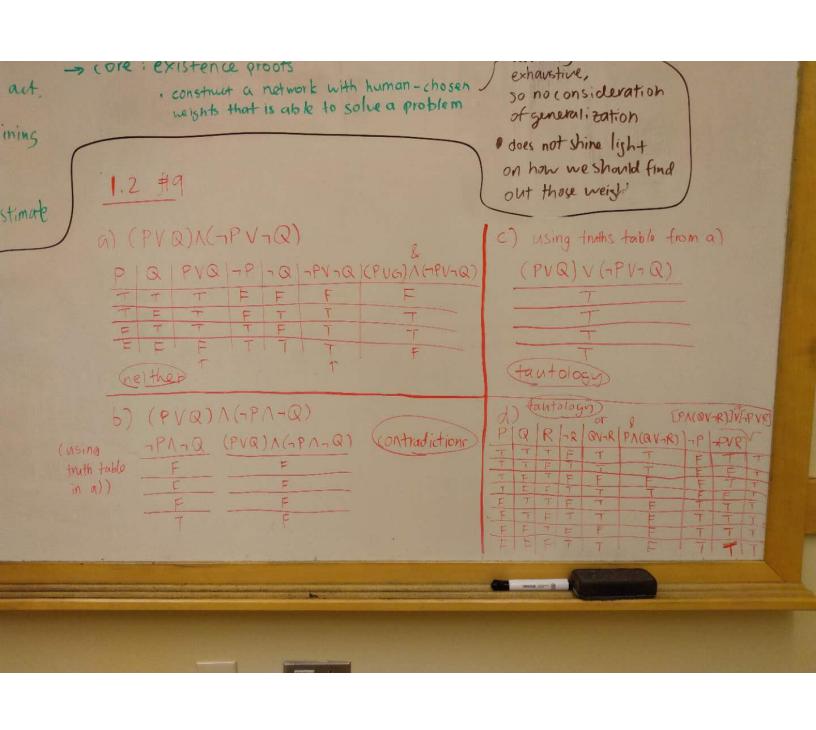
b) TPN-S= T(PVS) (by De Morgan's I will not buy pants or shirt.

c) -PV 75 = 7 (PNS) (by De Morganis

I will not buy pants and shirt.







1.2 #12

on how we should find out those weight

a) 7(7PVQ)V(PA7R)

= (PA7Q)V(PA7R) (Re Morgan's)

aw 2)

= PA(7QV7R) (distributive)
law

>=PV(-RAQ) (absorp)

b) 7(7PAQ)V(PA -R)

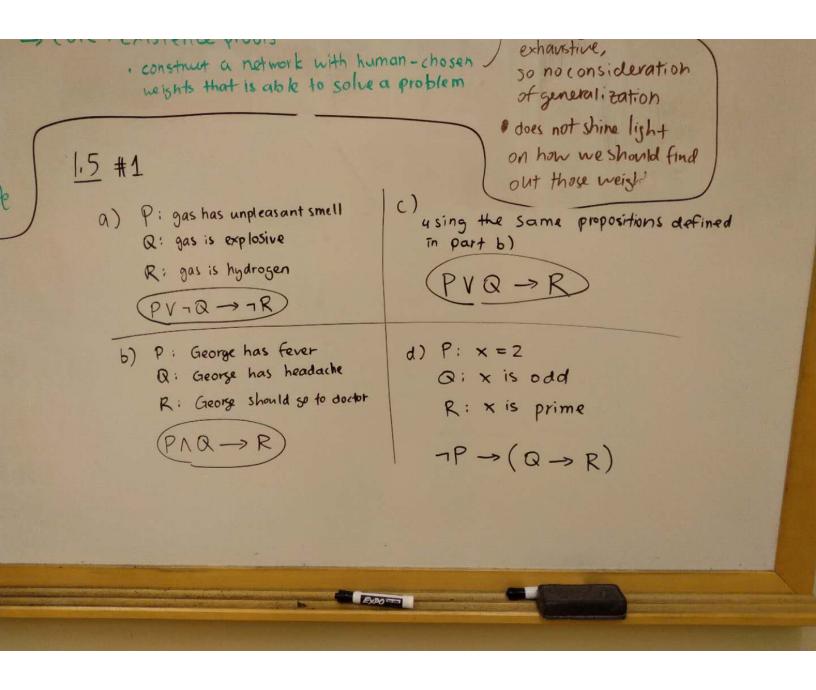
(PV-Q)V(PA-R) (De Morgan's)
law 1)

C) (PAR) V[-RA(PVQ)]

=[(PAR) V GRAP) V(-RAQ) (distribute)

= PA(RV-R) V (-RAQ)

tautology



For question 4, see the end.

1. 3

15 115 115

- 1.5 #7
- a)  $(P \rightarrow R) \land (Q \rightarrow R)$

(conditional law 1)

(distributive law)

(De Morgan's law Z)

(conditional law 1)

b) Show that  $(P \rightarrow R) \vee (Q \rightarrow R) \cong (P \land Q) \rightarrow R$ .

(conditional law 1)

(commutative law)

(idempotent law)

(De Morgan's law 2)

(conditional law 1)

## for question 8, see the end

1.5 #9

$$P \land Q$$
 $= \neg (\neg P) \land \neg (\neg Q)$ 
 $= \neg (\neg P \lor (\neg Q)) \quad (De Morgan's law 2)$ 
 $= \neg (P \rightarrow \neg Q) \quad (conditional law 1)$