Wonting with identifies ] How does negation appet granfies" Suple aug: (Tor F) = for real numbers! => \ta(x+1>2) (Ine) ~ offer every x, x+1 >x" 595 it holese that...  $\Rightarrow \exists \chi (\chi^2 + 1 = 3) \Rightarrow \text{But he ger real number}$   $\text{By the norisareal number} \chi, \chi^2 + 1 = 3 \text{ leg } |\chi^2| + 2 \text{ leg } |\chi^2$ osolo: real nucles include: rational juristimuladulole nucles really any nucle you can thent of the sate unginey or influtor  $\Rightarrow \forall x \left(x^3 + 17x^2 + 6x + 1170\right)$   $\therefore \left(-\operatorname{smothy}\right)^3 \Rightarrow \operatorname{voy} \operatorname{large} : \operatorname{False}$ 

Uz 7y (x3+y3=0) Bit thee, hat ofer all x, noe = ag, x3 +y3=0  $-y^3 = -x^3$  ... (the) gwer ay x, jost let y se-negative x. when you cake possible nuter, its positive negative 11, its negative gar will get 0, by takey -y. Jx Hy (xty=0) Jan every y. (x) "Is boleanx, such that for ay y you add (talk)
If it you get 0. =) quantifles should be other way around. elway

Frevery y, here is on x, such that x+y=0 Greel way

Exceptains.  $\forall x = y(x = y)$ for every, toeisay, such that rule table  $4 \times 10$ , then  $y^2 = x$ mades if (Tre) of -x, ton fall orticodort, famo nos) (True) or non regalise \$x, then y=x fron any 4 will make if Inc Sent y2 x Regating Stokement that have quentifice.

By putting T symbol in flowt But also, you will need to produce a positive asserting, not negative as What is, rather then what is not

Let A(x) be some property of it. g. x = a real root of he equation x2+12x+1=0 I sout - Souther to an equation of frallx, Ax) equalvalent to  $\exists x [\neg Aw]$ , here exist x, such that not Ax) Eg. It is not me coe that all motorits the red light

"Is equally to"

There is a motorist who does

not run led light." renjoberas hat have two are aguivalent. lember to prove Equivalence,

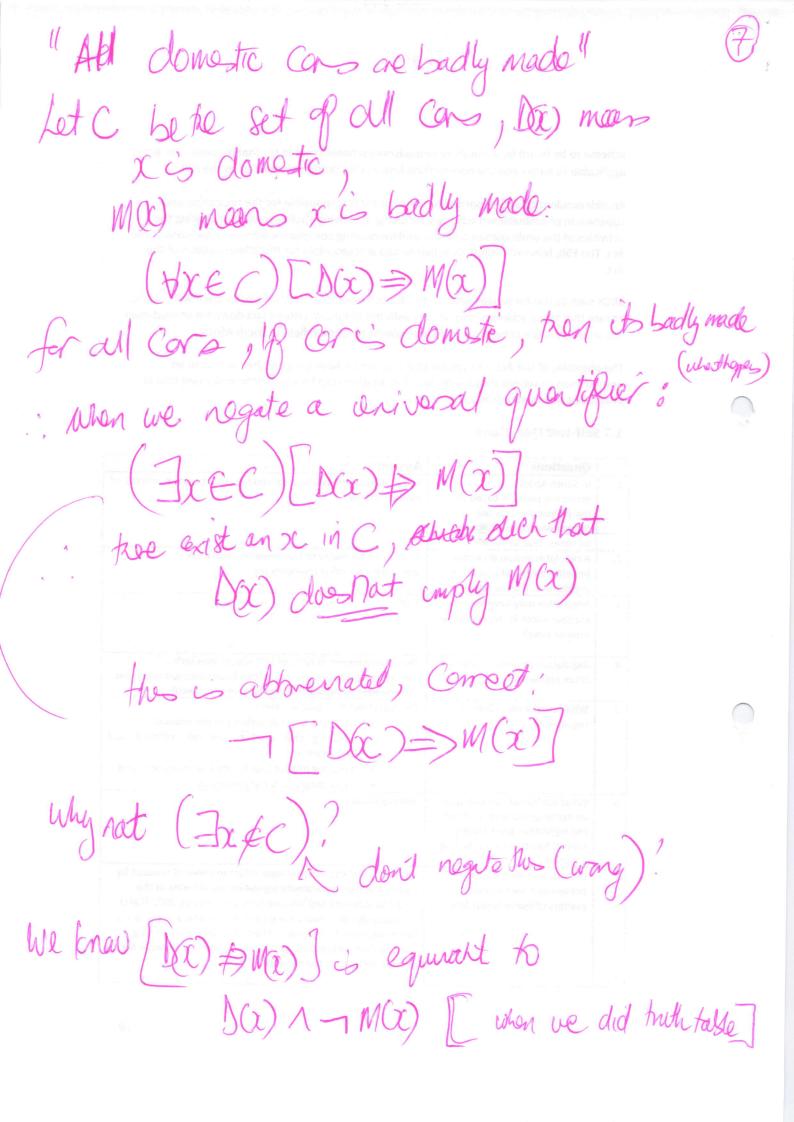
() First prove cuplication from left torigit

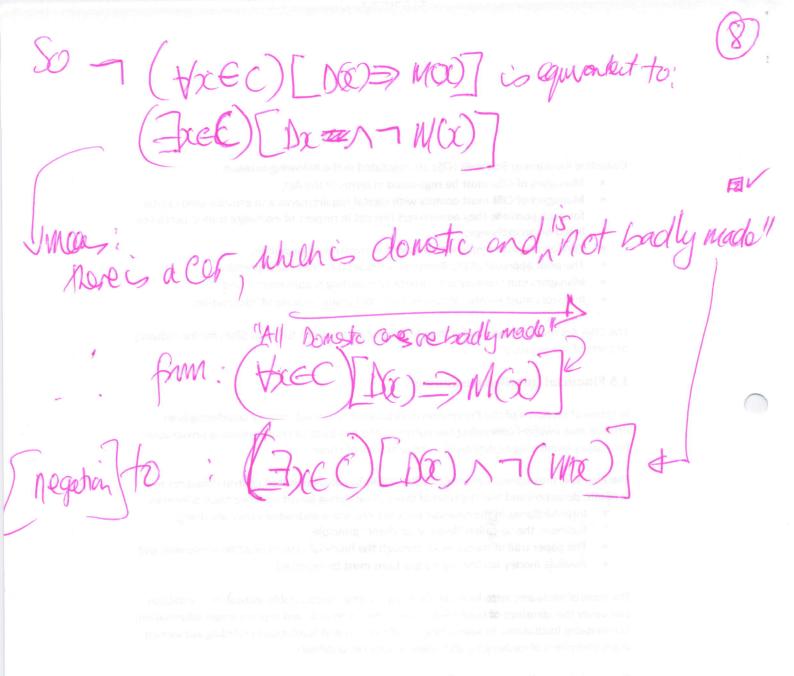
(i) Iron flow right to left.

1 left to right Col => Assume -[ fx Axo]
( next, for all x, Axo) of it is not me cose for all x, A(x), her at least one x most fail to surgey A(x). Sofer at least one x, 7 Acc) is the  $\exists x [\pi(A\alpha)]$ The gast on x, such that not A(x) is held) . Pat left to right implication > [ ( somme 7 [ the Ato)], and & Condudoel Fx [-1 AGC) Enguttoget

Assume  $\exists x [\neg A(x)]$ "here son & for which Are) is falle"
Non Are) Commont be true for all x ·· Vx (Ax) most be false

 $T[\forall x A(x)]$ · Assume Fx[7A@], then
Conclude 7.[. VXA@] Remember the human brain is very good at doing logical reasoning about Ramulus Situatoris (& motors) / red light sample) When we turn situations into abstract verias, the brain feed it difficult. [at least at First] not reproducing it in an abstract state. Nother Gouple: Slew hat 7 [ Fix Ax) ( >> Vix [-1 A(x)] mue) = "It not ose, that more motions non red lynts (=) all motions, non red lights.





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I is Connell for Overseeing For agraved and Statistory Goden Issue a hipemen

There are several analysisment internal budy and days of ingin Sauce. And a 15th Parkuses Funds Adjudicable and the FAIS Configuresing of the forestern extreme extremes with the objection of the both and configurations. Survival the forestern and the forestern and survival the first industries are subtained.

i inde i stampe berve vir un'uni studimen Art, dilib grevides for due oscogenian et voluntare. Amburerseo scassinis arbylike n'il ny nurche y anti-nechele aggreenisculle it also provales tag Completus that fell unbule uning punch at un, it una rècagnéme anniquation andicagness.