| / | |
|------------|--|
| <u> </u> | |
| Cort | nested quantifiers. |
| | w=3· |
| | Ux 37 x+y=5; (1) |
| | preof: y= 1-x. |
| | 3y Vx x+y=J. (f) |
| | ρίγ |
| | => you cannot Find a specific y that meet the statement |
| | $3\times3y$ $\times+y=5$ (T) * when the quantitier is different, $3y3\times \times+y=5$ (T) be careful with the order. |
| | By 3x x+y=5 (7) be careful with the order. |
| | bx by x+y=5 (F) |
| | Yy Yn x+5=5 CF) |
| £ 2.2. | |
| | es like quantifiers commute: |
| individing | Vx y Pun, y) >77 Vy Vx Pun,y) |
| quaneitie | rs. 3x3yP(x,y) 37 3y3xP(x,y). |
| | |
| | En: Unto MANDA (T) |
| | UNGN YXCR X+n3x (T). |
| | "Nobody is perfect!" |
| | 7 (3x Pux) |
| | Yx 7P(x) |
| | Not everyone is perfect. |
| | 3 × アルメ). |
| | |
| | コフラグマアの) コナ マリス アルり、 |
| | Ex: negate AGB. |
| | 7 ym xGA> xGB. |
| | 177 3× ~ (x6A > x6B). |
| | 177 ZX 7(XBAVXEB) |
| | |

HT IN LXEAN X & B).

w. 1, 4, 9, 16 -.). En: Negate: Every natural number is a perfect square U=N 7 (Un Sen). 37 7 (Un IKEN n= R2) iff In 7 (IkGN hak2) 27 In UKGN nsk2 (T) e.g. k=3. Bounded quantifiers. (nothing to do with free & bound vars) 4x6A Yy < both bound" :] x : s "bounded" UXEA PCX) : Yx (XGAAPCX). 3x6A PUX) = 3x UX6A A PUXI) Ex: x6 {2,3,4}. x2>4 $277 \forall \pi \qquad \pi \in \{2,3,4\} \land \pi^2 \nearrow \lor \cup (1)$ 7 × 6 { 2, 3, 4 } x2 = 9 : 77]x 76{2,3,4} 1 x2=9 (T). * the quantifiers used here are bounded quantifiers. Nove: when we use a universal discourse, all quantitiers are bounded, Bounded quantifier and regardons: 7 3 XGA PCX). 177 7(3x (xGAAPLX)) (77 Ym 7 (XEANPCM)) 177 Ux xUAUTPIX). 177 4x x6A->7PLA) 277 Ux6A 7P(x). TXEA PLX) iff 376A 7PCx). Note: when A= \$ -> XEA is False, Pixx is False. HXGA P(x). 7 (3x6A 7Pcx)) => T

| 776A PCX) => F. |
|---|
| 176A PCX) => F. |
| |
| |
| Distributive laws: |
| Un (P(x) 1 Q(x)) 177 (Vx P(x)) 1 (Vx Q(x)) |
| V x (P(x) V Q(x)) < X> (Wx P(x)) V (dx Q(x)). |
| eg. xer P(x): x>0 P(x) F |
| QUA): x so Qua) F |
| 3 x (Pix) ∧ Qix) < X>(3 x Pix) / (3 x Qix)). |
| these or could be not the same or. |
| 7x (P(x) VQ(x)) :77 (7x P(x)) V(7x Q(x)). |
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