Proof of Theorem 80

The theorem to be proved is

$\neg\, [x < y \quad \& \quad y \leq x]$

Suppose the theorem does not hold. Then, with the variables held fixed,

(H) $\quad [[(x) < (y)] \quad \& \quad [(y) \leq (x)]]$

Special cases of the hypothesis and previous results:

0: $x < y$ from H:x:y

1: $y \leq x$ from H:x:y

2: $\neg\, x < y \quad \vee \quad \neg\, y \leq x$ from 78;x;y

Inferences:

3: $\neg\, y \leq x$ by

0: $x < y$

2: $\neg\, x < y \quad \vee \quad \neg\, y \leq x$

4: QEA by

1: $y \leq x$

3: $\neg\, y \leq x$