

## Proof of Theorem 59

The theorem to be proved is

$$\neg Sx \leq x$$

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

$$(H) \quad [[(Sx) \leq (x)]]$$

### Special cases of the hypothesis and previous results:

$$0: Sx \leq x \quad \text{from } H:x$$

$$1: \neg Sx \leq x \quad \vee \quad (Sx) - x = 0 \quad \text{from } \underline{55} \rightarrow; Sx;x$$

$$2: \neg (Sx) - x = 0 \quad \text{from } \underline{21};x$$

### Inferences:

$$3: (Sx) - x = 0 \quad \text{by}$$

$$0: Sx \leq x$$

$$1: \neg Sx \leq x \quad \vee \quad (Sx) - x = 0$$

$$4: QEA \quad \text{by}$$

$$2: \neg (Sx) - x = 0$$

$$3: (Sx) - x = 0$$