393(a) Considering $E$ as the unknown, find three solutions of $E, E+1 = \text{nat}$. 

§ Here are 4 solutions:

- $2 \times \text{nat} \text{nat}$
- $\text{nat}$
- $1, 2 \times \text{nat}$
- $0, 2 \times \text{nat} + 1$

(b) Now add the induction axiom $B, B+1 = \text{nat} \implies E: B$. What is $E$?

§ We now have inconsistency, so we can prove anything. From the first solution above and the induction axiom we have $E: 2 \times \text{nat}$. From the last solution above and the induction axiom we have $E: 0, 2 \times \text{nat} + 1$. From a distributive bunch axiom we have

$E: (2 \times \text{nat})' (0, 2 \times \text{nat} + 1)$

which says $E: 0$ and this contradicts the axiom of part (a).