359(a) Considering $E$ as the unknown, find three solutions of $E, E+1 = nat$.

§ Here are 4 solutions:

$2 \times nat$

$nat$

$1, 2 \times nat$

$0, 2 \times nat + 1$

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

§ We now have inconsistency, so we can prove anything. From the first solution above and the induction axiom we have $E: 2 \times nat$. From the last solution above and the induction axiom we have $E: 0, 2 \times nat + 1$. From a distributive bunch axiom we have $E: (2 \times nat)'(0, 2 \times nat + 1)$ which says $E: 0$ and this contradicts the axiom of part (a).