MA-236: Homework 12

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I pledge my honor that I have abided by the Stevens Honor System.

"Prove that $0 \times ss0 = 0$ in Robinson arithmetic."

Pruned Tree where $Q_1 ... Q_7$ are the axioms of Robinson's arithmetic:

1. $0 \times ss0 \neq 0$ ¬Conclusion
2. $0 \times ss0 = 0 \times s0 + 0$ Q_7
3. $0 \times ss0 = 0 \times s0$ Q_4
4. $0 \times s0 = 0 \times 0 + 0$ Q_7
5. $0 \times s0 = 0 \times 0$ Q_4
6. $0 \times s0 = 0$ Q_6
7. $0 \times ss0 = 0$ 3,6

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Since the pruned refutation tree closes, the sentences are **inconsistent**. Therefore, the argument is **valid**.