

Proofs by contradiction and induction

Theorem: $\forall n \in \mathbb{Z}^+, 1 + 2 + \dots + n = n(n + 1)/2$

Proof by contradiction.

If the statement is not true, then there is at least one $n \in \mathbb{Z}^+$ such that $1 + 2 + \dots + n \neq n(n + 1)/2$.

Question:

What can the smallest such n be?