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$\sum_{i=1}^{m} 2i - 1 = m(m+1) - 1 \quad m > 0$

Base case

$m = 1$

$m(m+1) - 1 \rightarrow 1(2) - 1 = \underline{1}$

$\sum_{i=1}^{1} 2i - 1 = 2 \cdot 1 - 1 = \underline{1}$

True

this implies ↓

$1 + 3 + \cdots + 2k - 1 = k(k+1) - 1$

$k(k+1) - 1 + 2k + 1 \neq (k+1)(k+2) - 1$

It is not equal, which means it doesnt hold for all $m > 0$