

Problem 17) For $N = 1$, it is easy to see that $\sum_{n=1}^1 (2n - 1) = 1 = 1^2$. Suppose the identity is valid for N . Proof by induction requires that we demonstrate its validity for $N + 1$. We thus write

$$\sum_{n=1}^{N+1} (2n - 1) = \sum_{n=1}^N (2n - 1) + [2(N + 1) - 1] = N^2 + 2N + 1 = (N + 1)^2.$$

The proof is now complete.
