

Lesson 1 Problem 2b Solution

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Problem 2

b) We'll prove by induction on n . Base case: when $n = 1$, the equation becomes $1 = 1^2$, clearly true. Suppose, as induction hypothesis, that $1 + 3 + \dots + (2n - 1) = n^2$. We want to show that $1 + 3 + \dots + (2n - 1) + (2n + 1) = (n + 1)^2$.

$$\begin{aligned} 1 + 3 + \dots + (2n - 1) + (2n + 1) &= n^2 + (2n + 1) \\ &= (n + 1)^2 \end{aligned}$$

completing the induction.