

A Proof by Induction—just fill in the gaps

The general statement $P(n)$ I want to prove, which depends on n , is

The smallest value for which this is true is $n = \underline{\hspace{2cm}}$

Base Case: For $n = \underline{\hspace{2cm}}$ the statement is:

This is true because:

The base case is now proved.

Induction hypothesis: Suppose that $P(k)$ is true. That is:

The statement $P(k + 1)$ is:

Assuming that $P(k)$ is true, it follows that $P(k + 1)$ is true because (here you can use $P(k)$ and any mathematical rules):

So given that $P(k)$ is true then $P(k + 1)$ is also true—the induction step is successful.

So, by induction, our statement $P(n)$ is true for all $n \geq \underline{\hspace{2cm}}$