

# Mathematical Induction Template

Base Case: (Show that the result is true for  $n = 0$ .)

⋮

Inductive Step: Assume that the result is true for  $n = k$ . Consider the case where  $n = k + 1$ . (Manipulate one of the expressions involved so that you can apply the *inductive hypothesis* to establish the truth of the result for  $n = k + 1$ .)

⋮

(Concluding Remarks) Since we have shown that

1. The result is true for  $n = 0$ .
2. If the result is true for  $n = k$ , then the result is true for  $n = k + 1$ .

It follows by the principle of mathematical induction that the result is true for all  $n \in \mathbb{N}$ .